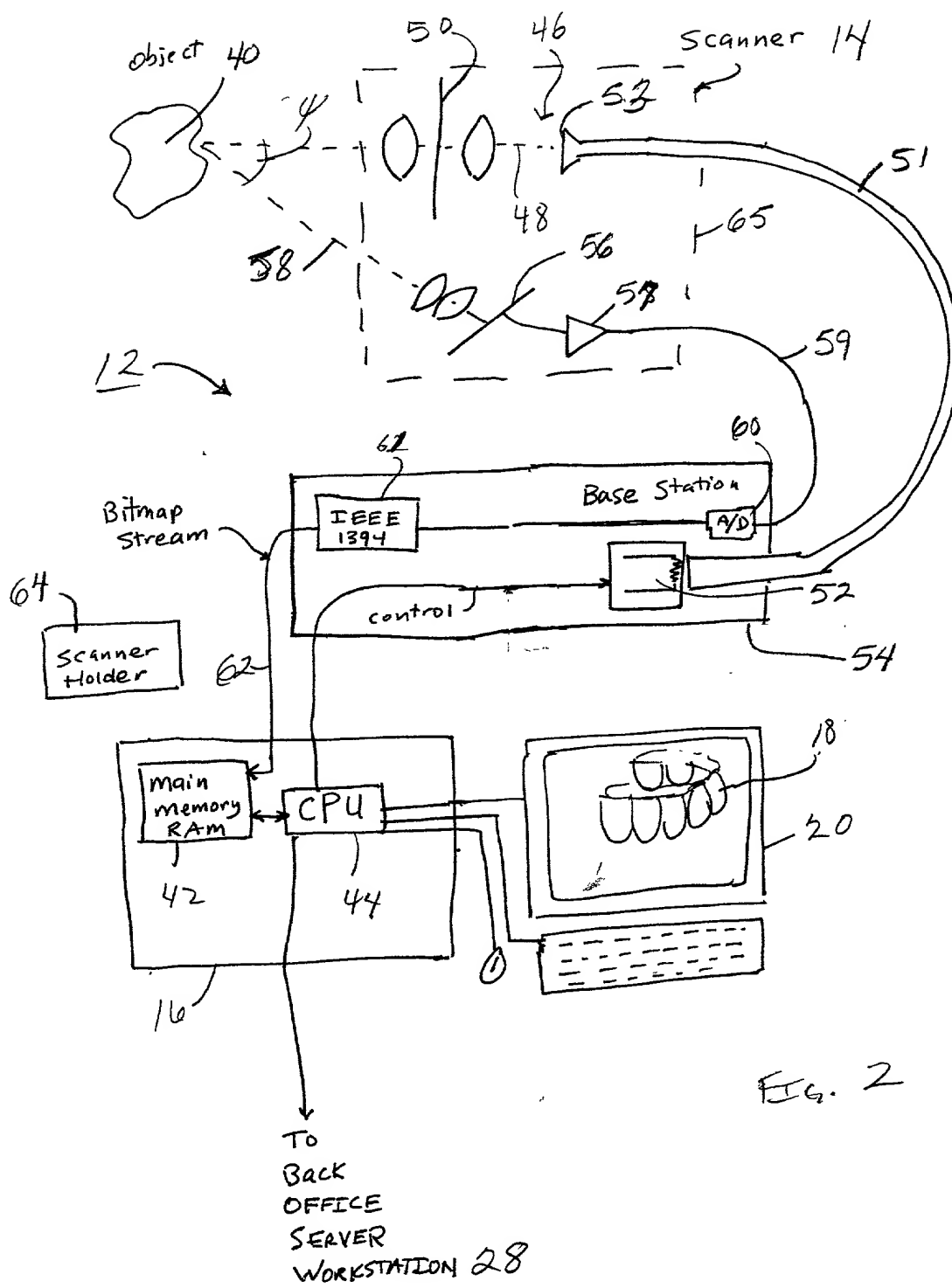
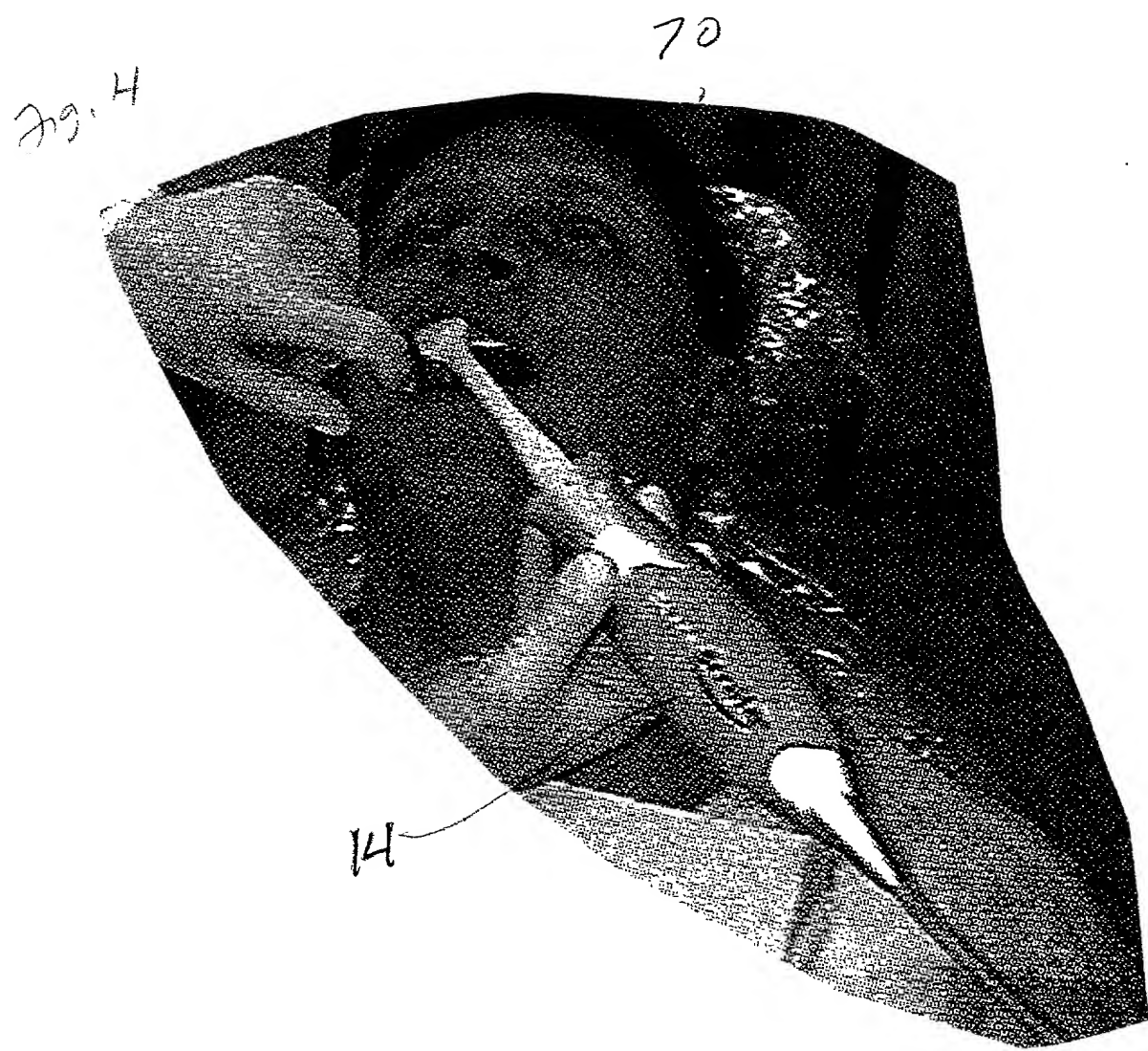
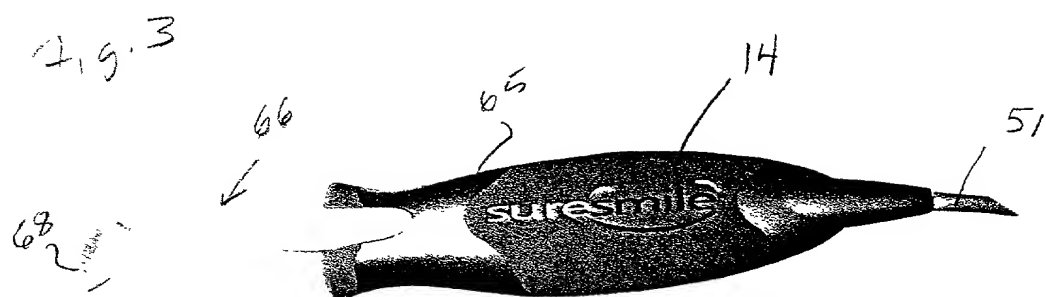


Fig. 1





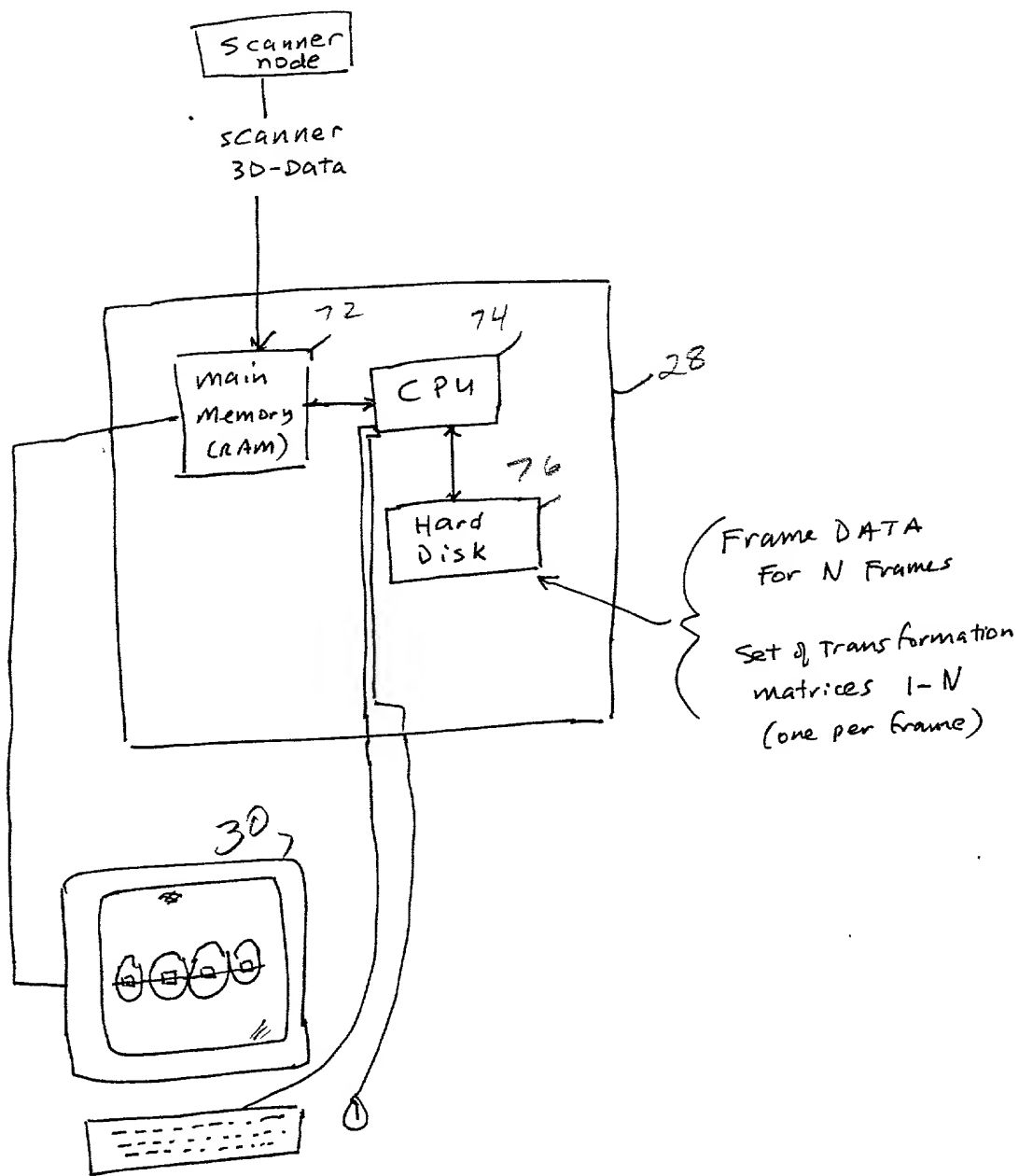


Fig. 5

3-Dimensional IMAGE capture (per frame)

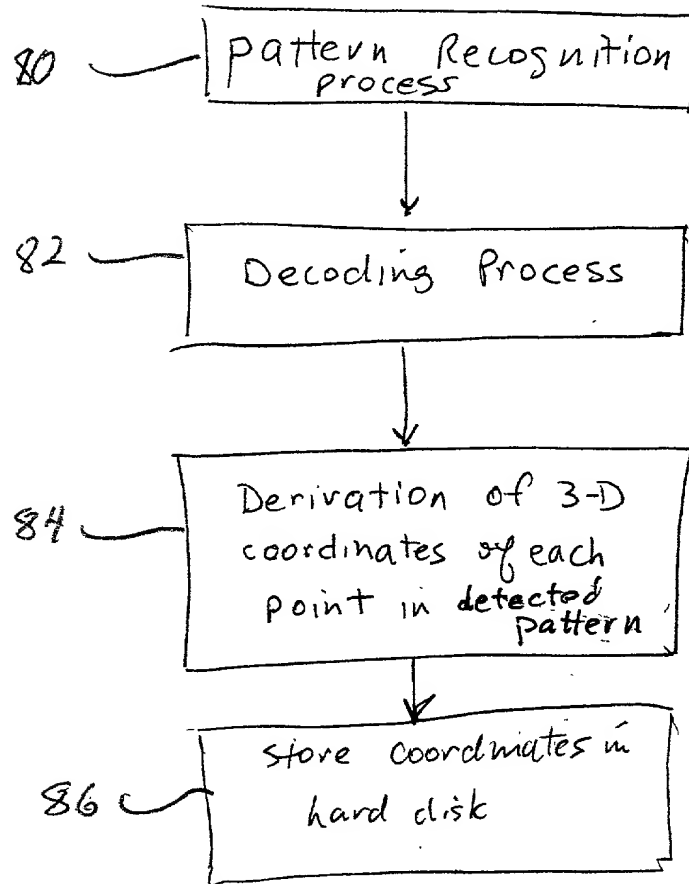
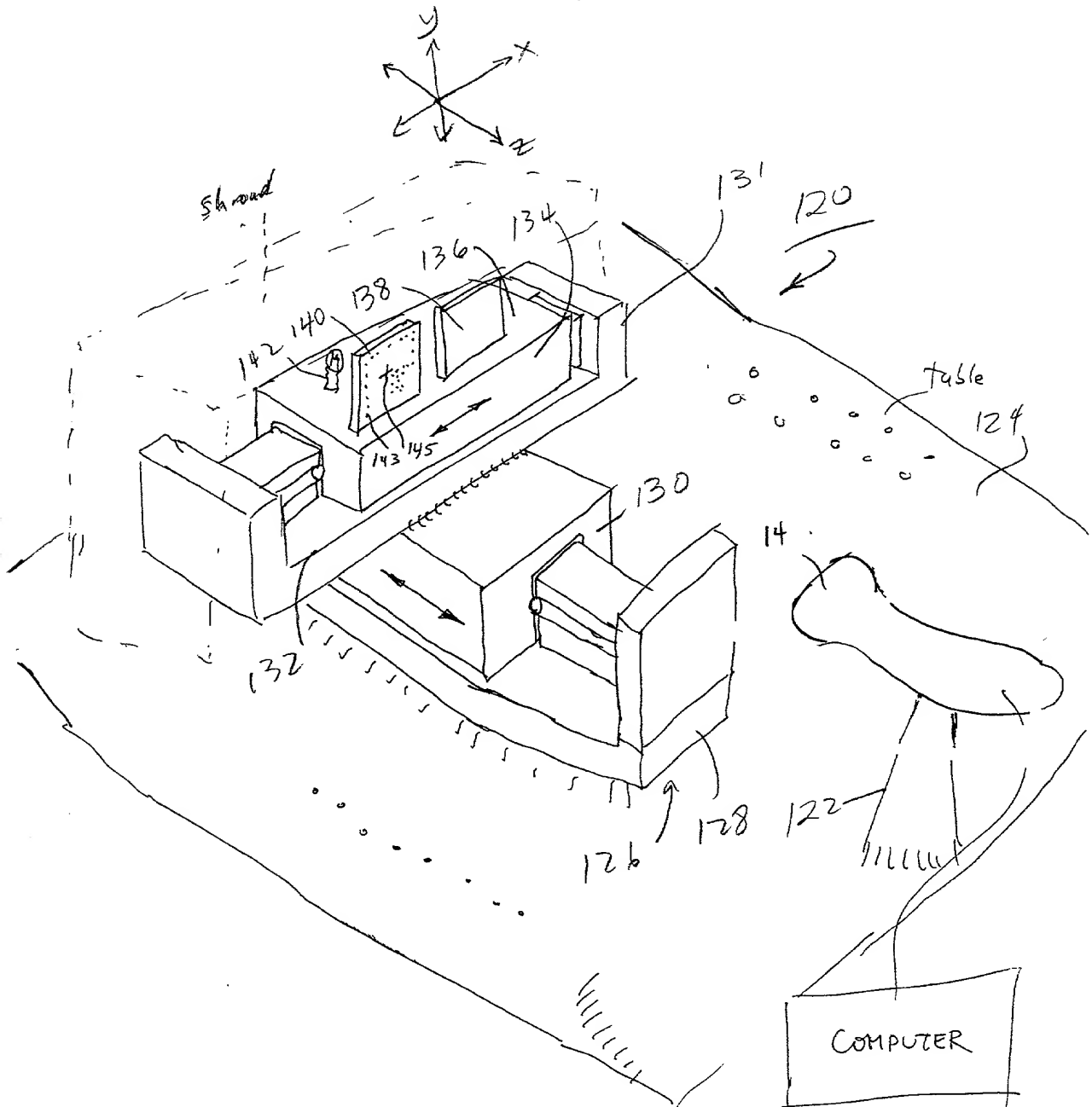


Fig. 6

Fig. 8

Fig. 11



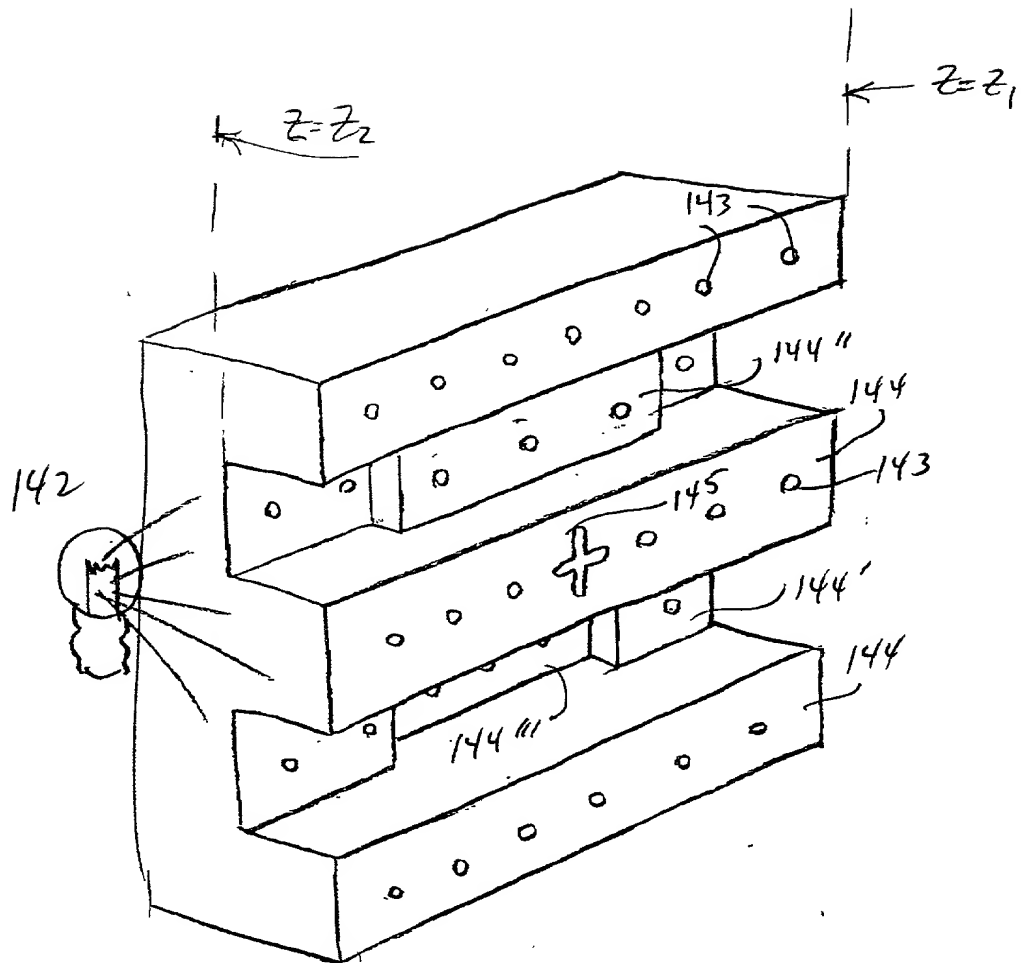


Fig. 8A

Fig. 9

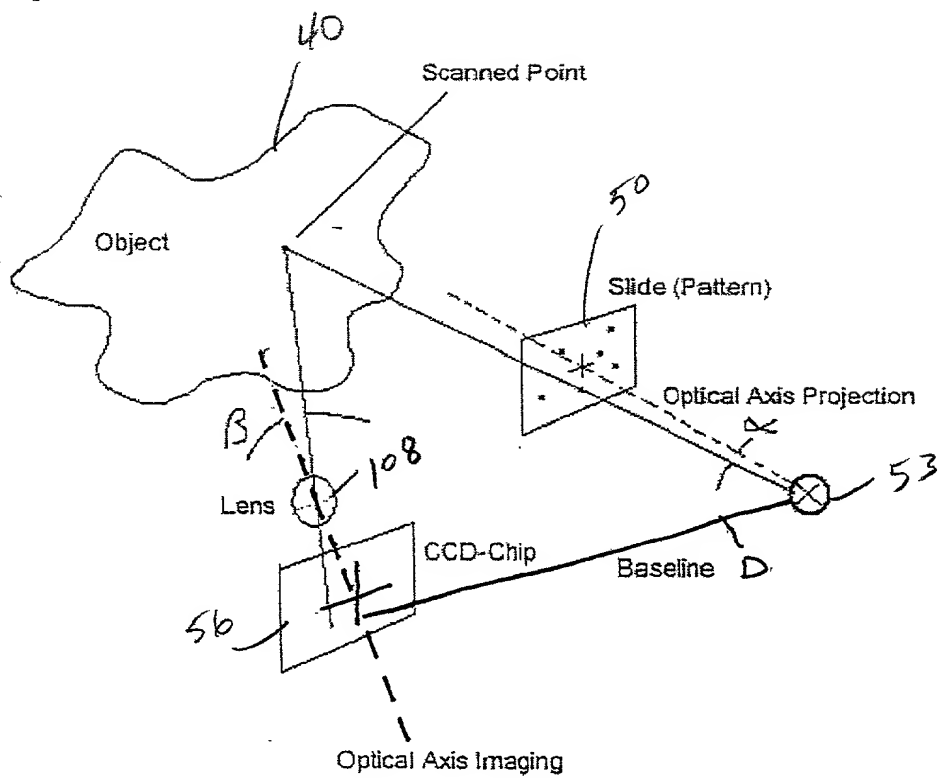


Fig. 9B

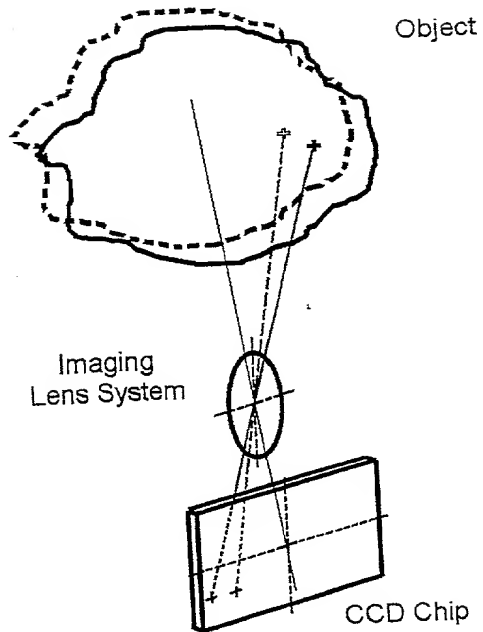
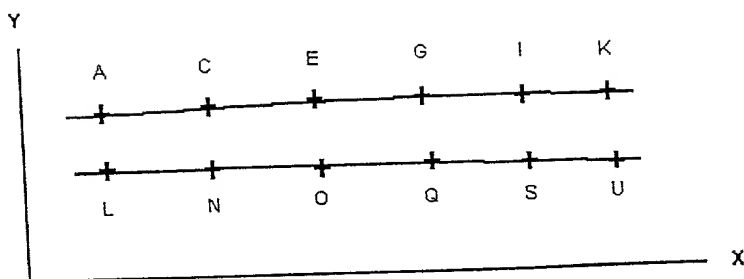
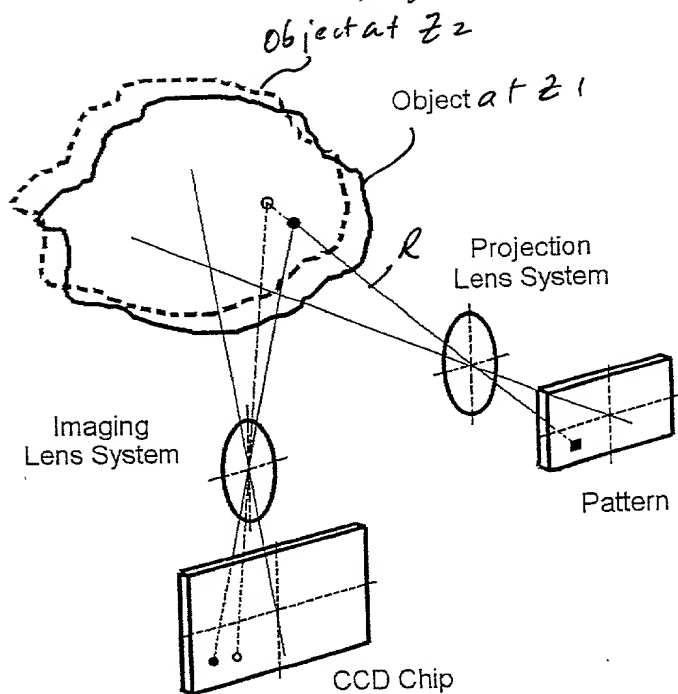


Fig. 9A



Pixel coordinates for portions of the pattern assigned to a certain Z-level

Fig. 9C

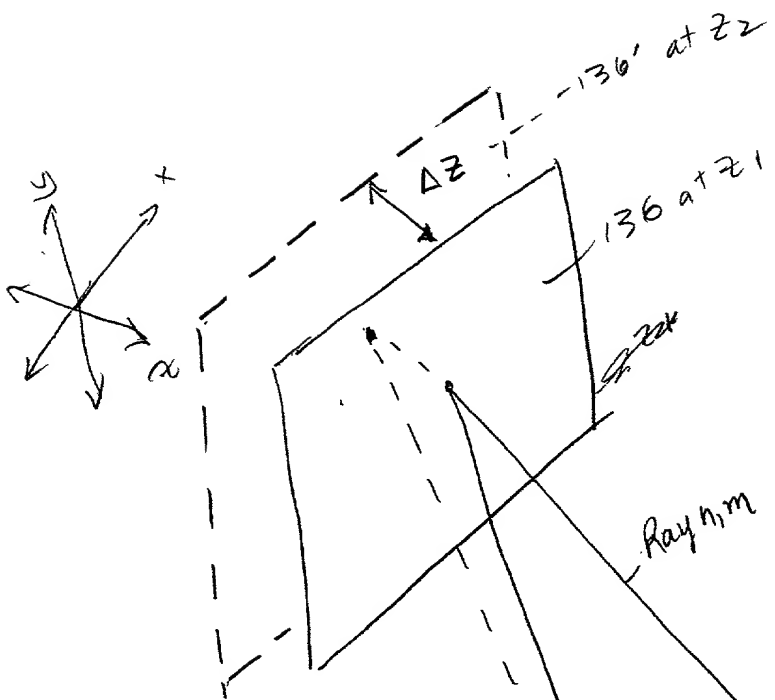
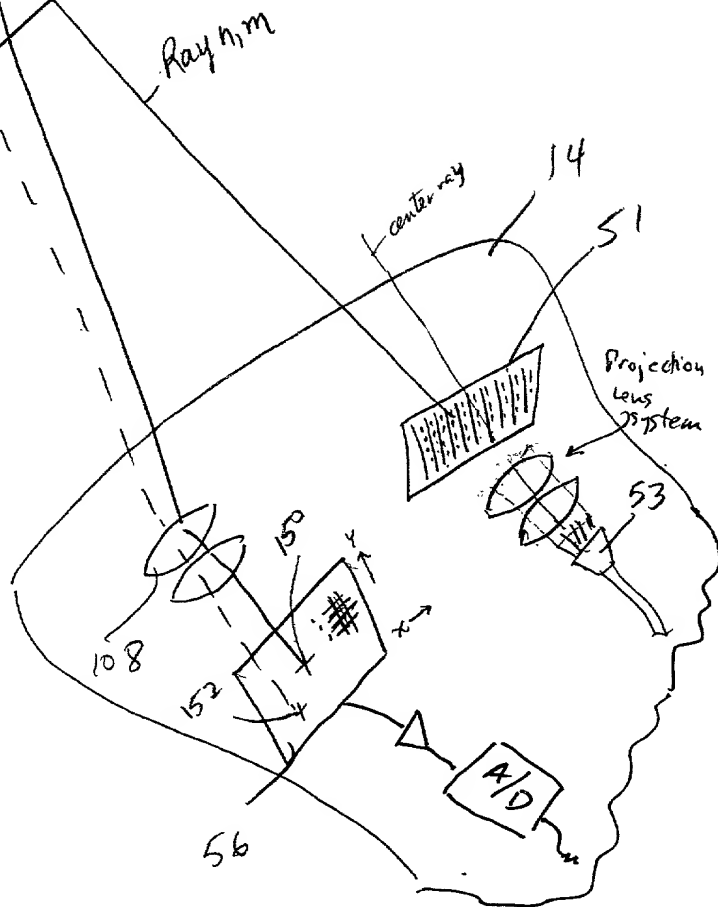


Fig. 10



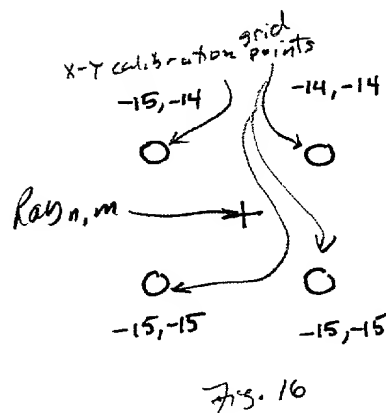
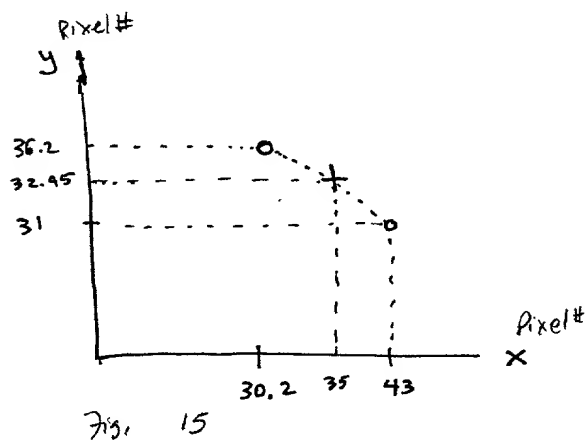
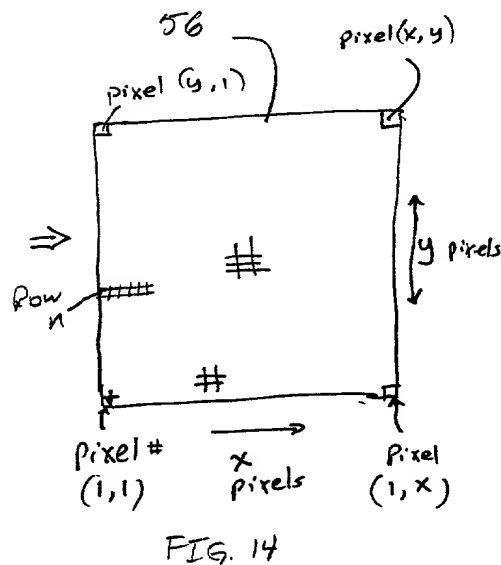
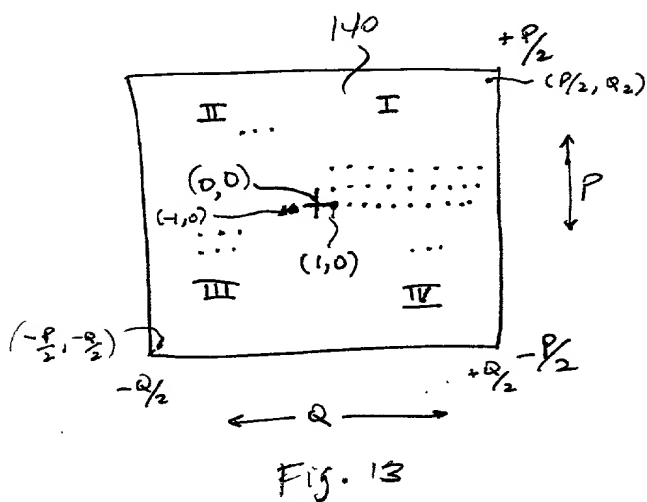
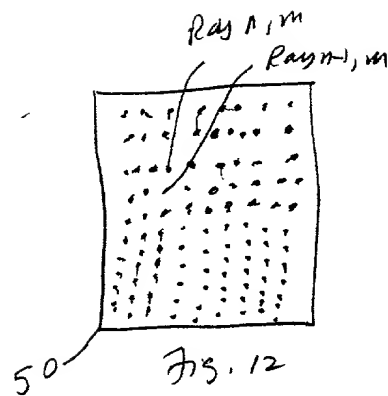
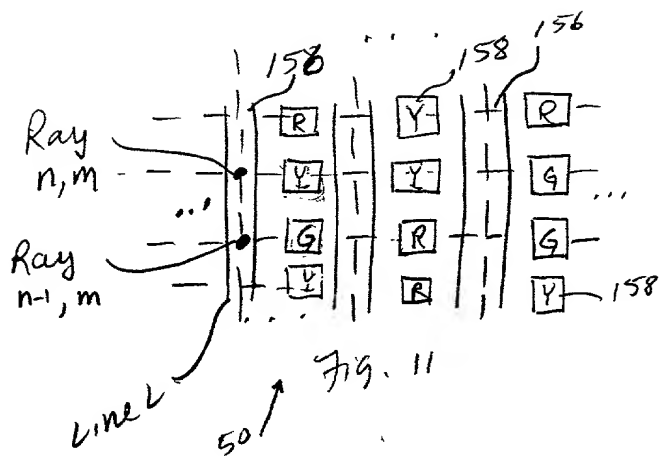


Fig. 17

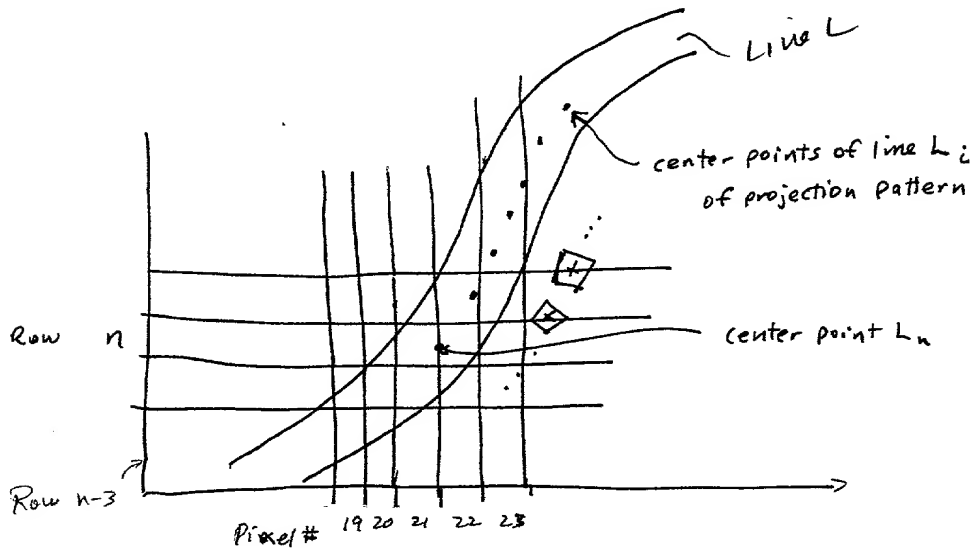
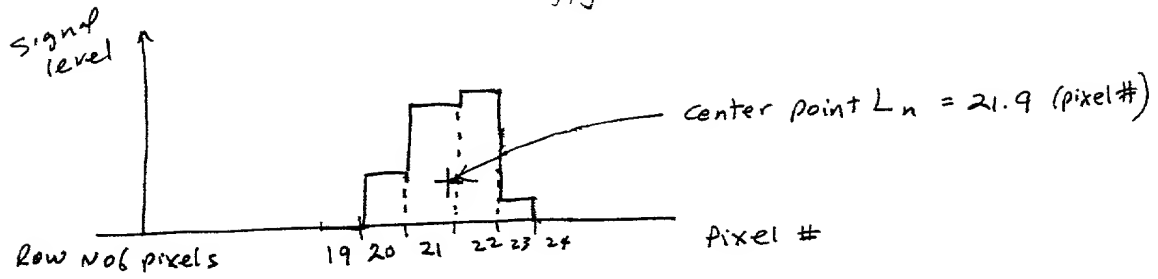


Fig. 18

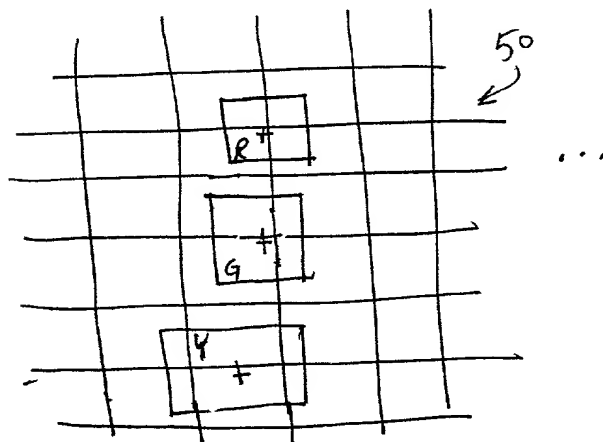
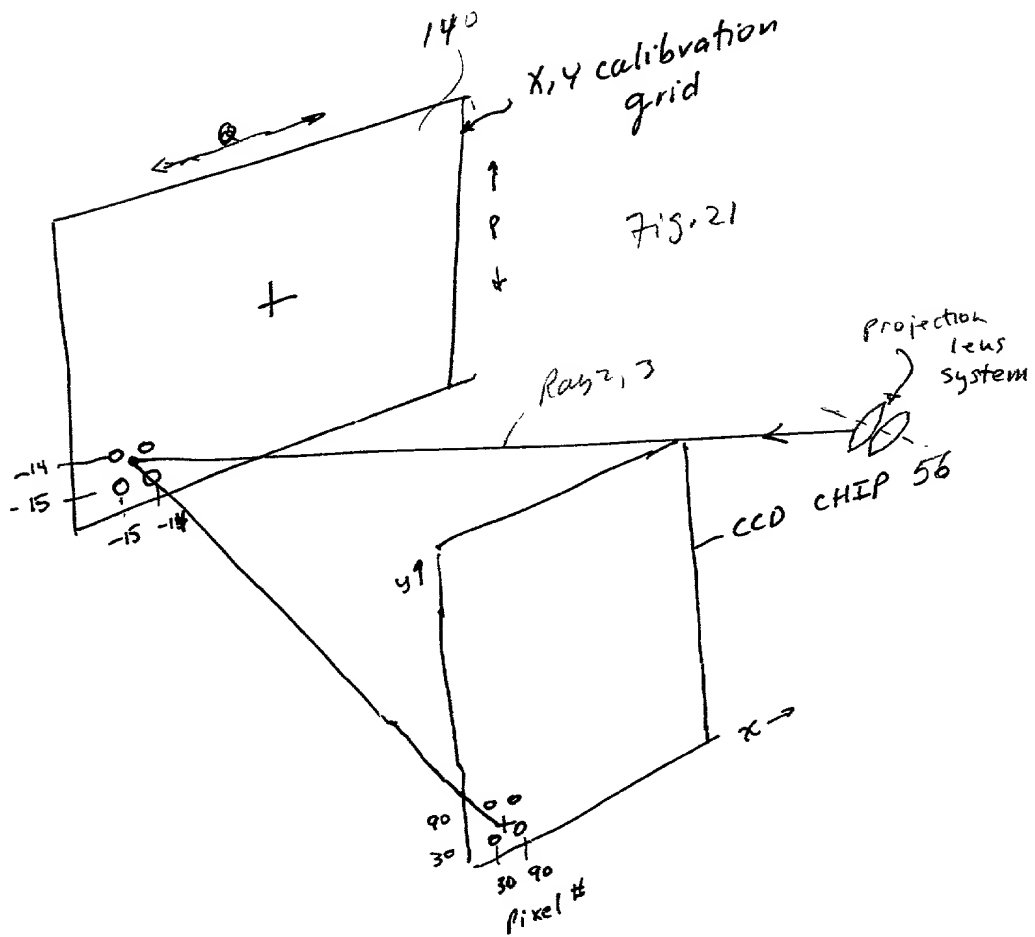
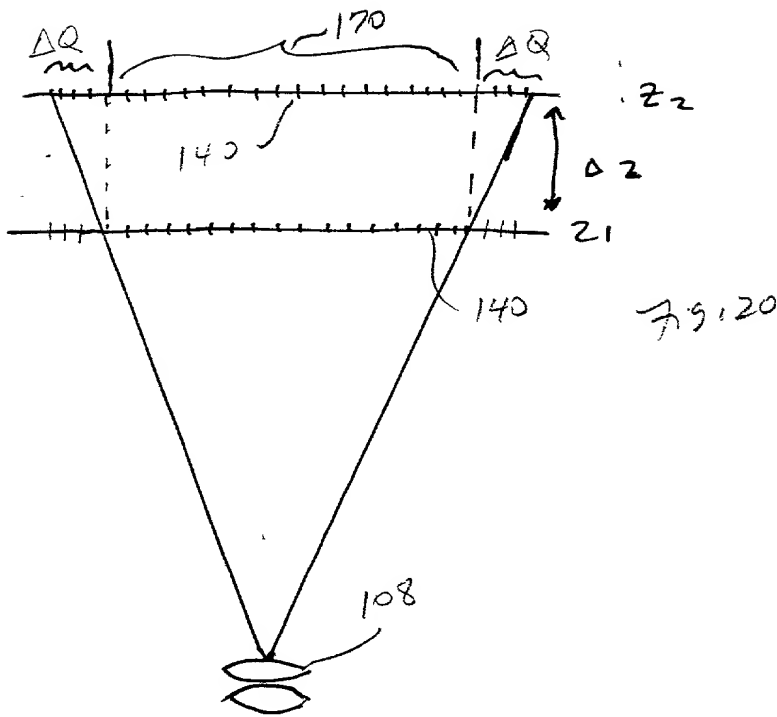
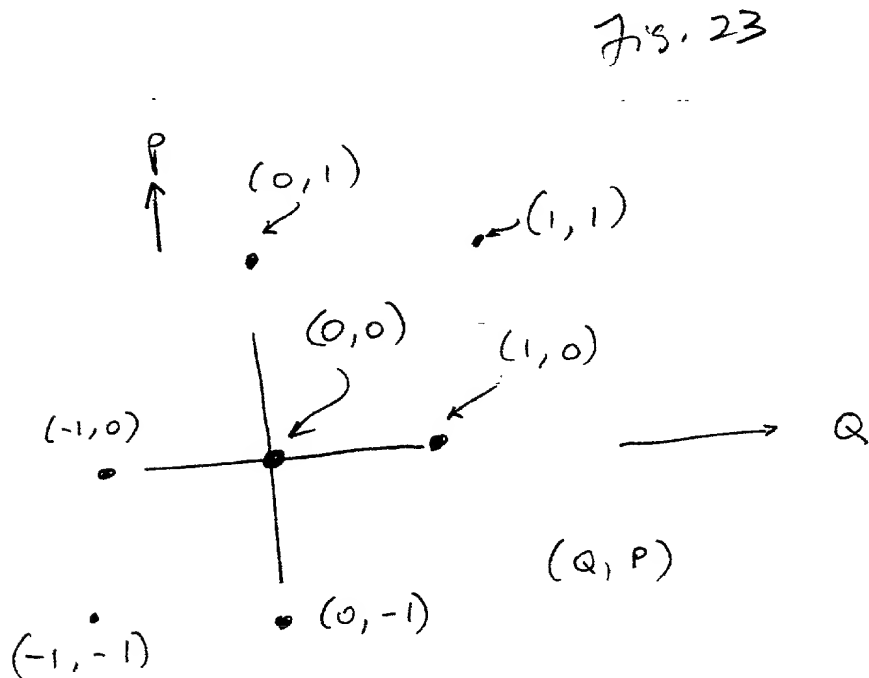
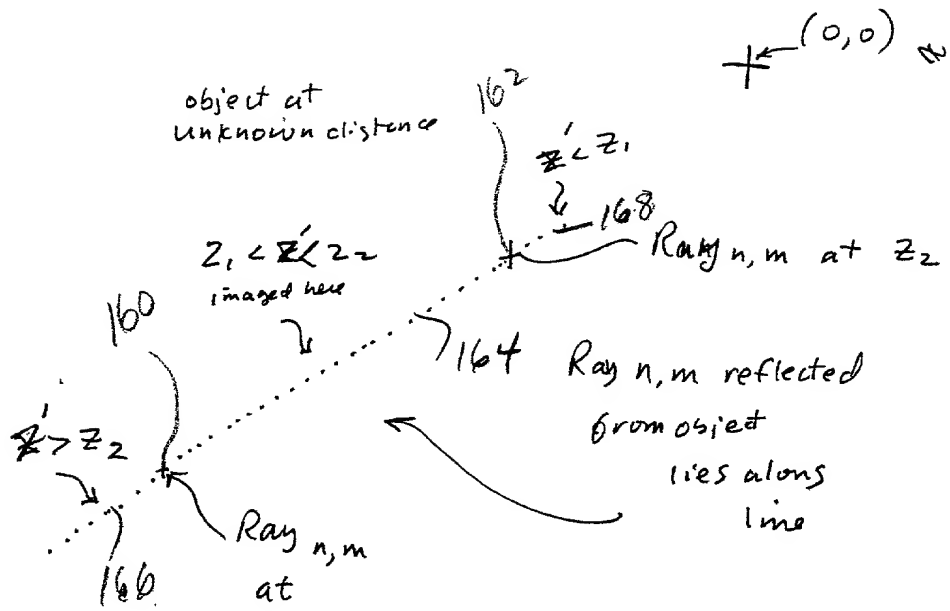


Fig. 19





79,24
(before)

Calibration Table #1

	Line 1					Line 2					... Line N				
	Row 1	Row 2	Row 3	Row 4	Row M	Row 1	Row 2	Row 3	Row 4	...	Row M	Row 1	Row 2	...	Row M
Z ₁	CCD X	1.0	1.1	1.5	2.1	...	27.1	29.5	30.2	37.1					
	mm Distance														
	CCDY	10.2	20.4	32.8	44.5	Nit	11.5	21.6,	36.2	44					
	mm Distance														
Z ₂	CCD X	3.9	4.5	6.8	12.2		34.0	41.1	43.0	46					
	mm Dist.														
	CCDY	12.1	21.5	30.4	46.3		13.2	21.8	31.0	48.2					
	mm Dist.														

(Q, P)

Calibration Table #2

Quadrant I				Row 0				Row 1				Row + P/2			
				(0,0)	(1,0)	(2,0)	(3,0)	...	(Q/2 - ΔQ, 0)	...	(Q/2, 0)	(0,1)	(1,1)	(2,1)	...
Z ₁	CCDX	640.1	700.2	760.6	820.5	...	...	...	...	...	...	640.1	700.2	...	...
	CCDY	640.1	640.1	640.3	640.4	...	...	...	...	...	...	...	...	...	...
Z ₂	CCDX	640.2	680.3	741.2	801.6	...	...	...	...	...	...	...	...	...	...
	CCDY	640.2	640.3	640.1	640.1	...	...	...	...	...	...	...	...	...	...

Quadrant II

				Row				Row 1				Row + P/2			
				(-1,0)	(-2,0)	(-3,0)	(-4,0)	...	(Q/2 - ΔQ, 0)	...	(-Q/2, 0)	(-1,1)	(-2,1)	(-3,1)	...
Z ₁	CCDX														
	CCDY														
Z ₂	CCDX														
	CCDY														

Quadrant III

Z ₁				(-1,-1)	(-2,-1)	...
				CCDX	CCDY	...
Z ₂				CCDX	CCDY	...

Quadrant IV

Z ₁				(0,-1)	(1,-1)	...
				CCDX	CCDY	...
Z ₂				CCDX	CCDY	...

719, 25

Fig. 26

CCD X, CCD Y = pixel #, in subpixel resolution

(after)

Calibration Table #1

Pattern Line 1				Pattern Line 2				Line N			
Row 1	Row 2	Row 3	Row 4	...	Row M	Row 1	Row 2	Row 3	Row 4	...	Row M
1.0	1.1	1.5	2.1	...	...	27.1	29.5	30.2	37.1	...	...
mm Distance								-14.6			
CCD Y	10.2	20.4	32.8	44.5	...	11.5	21.6	36.2	44	...	...
mm Distance								-14.4			
CCD X	3.9	4.5	6.8	12.2	...	34.0	41.1	43.0	46	...	...
mm Dist.								-14.8			
CCD Y	12.1	21.5	30.4	46.3	...	13.2	21.8	31.0	48.2	...	...
mm Dist.								-15.8			

after

Fig. 28

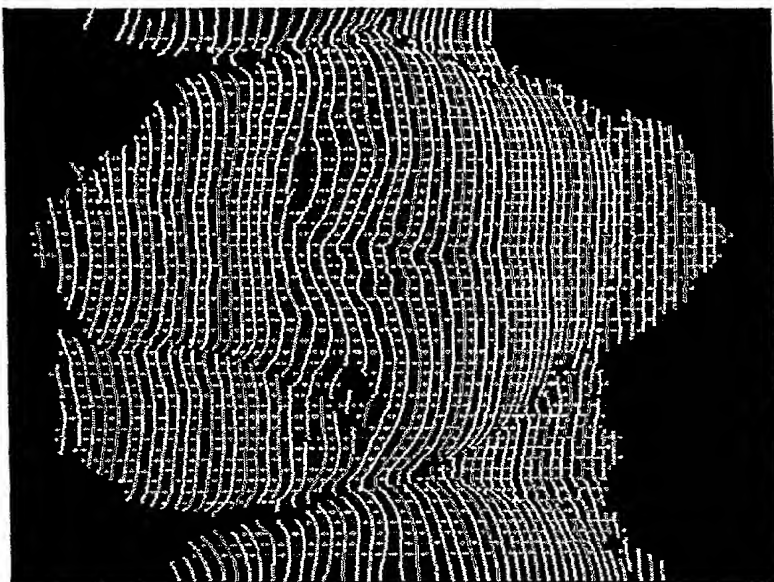


Fig. 27

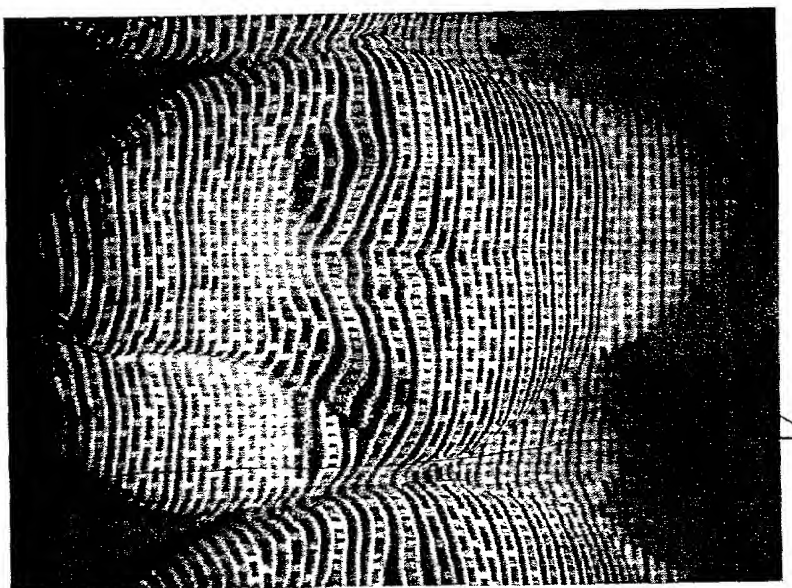




FIG. 29

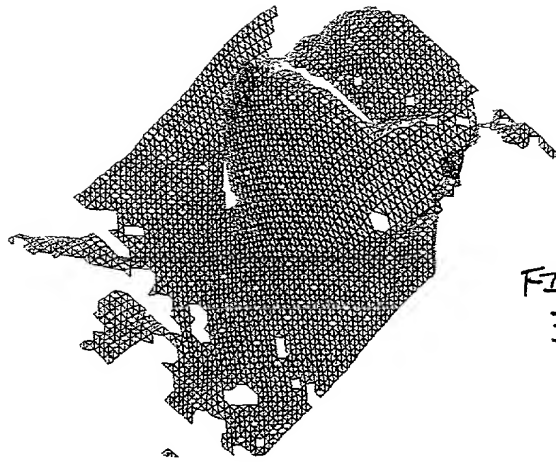


FIG.
30



FIG. 31



FIG. 32

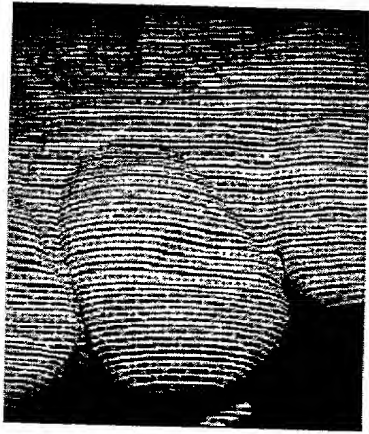


FIG. 33



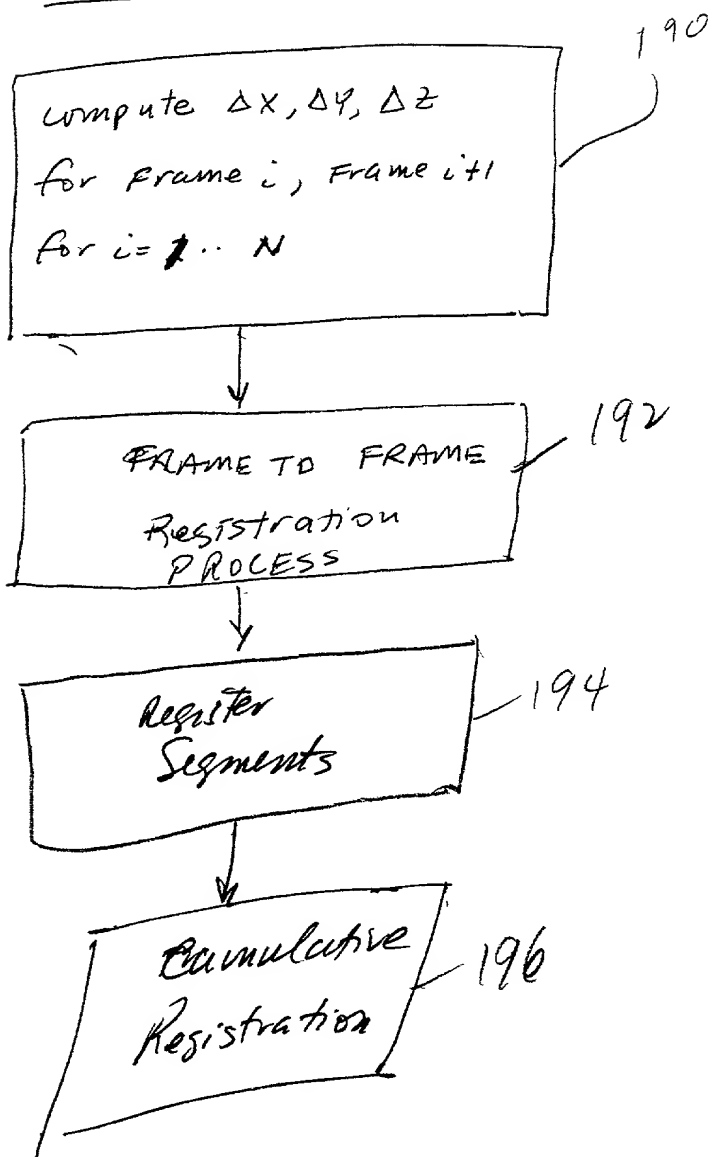
FIG. 34



FIG.
35

Fig. 36

Registration



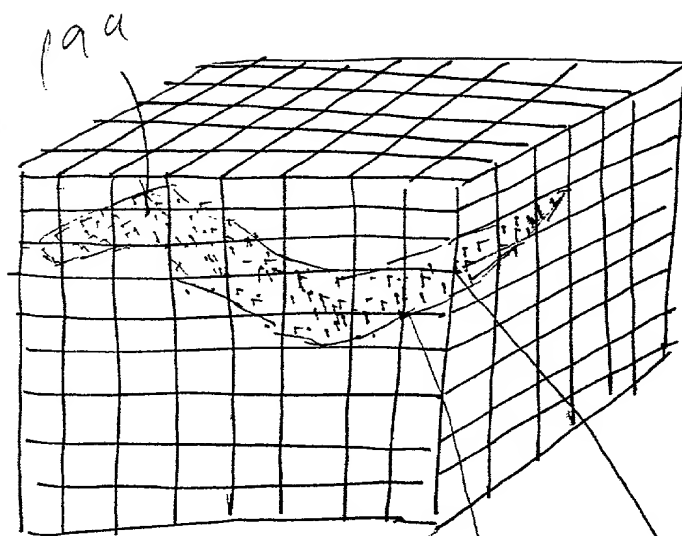
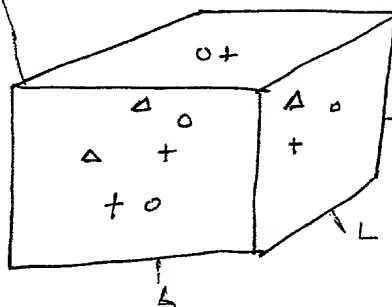


Fig 37A

Fig.
37B



$L = 1.0 \text{ mm}$

Δ = points of frame i
 $+$ = points of frame $i+1$
 o = points of frame $i+2$

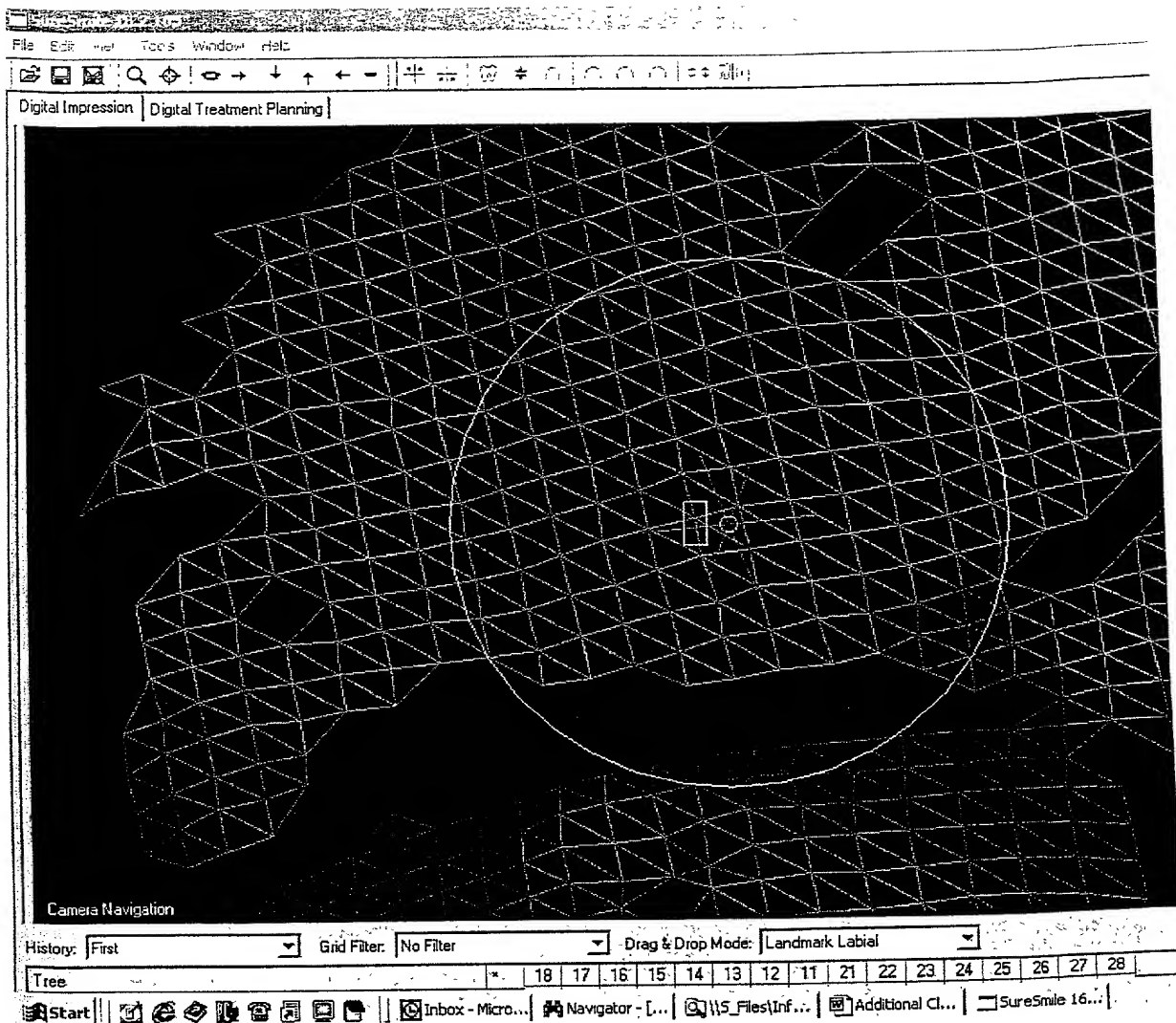
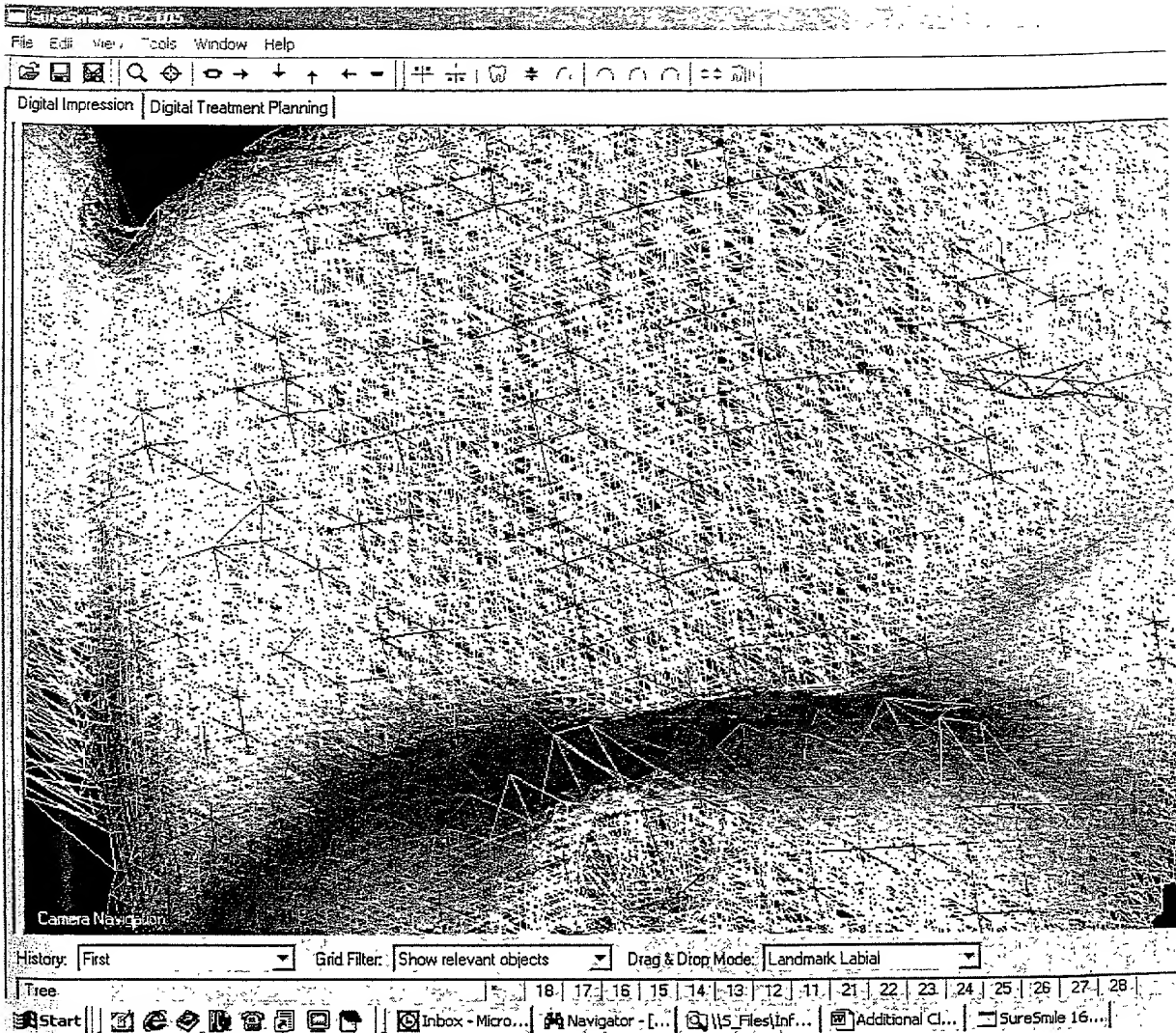
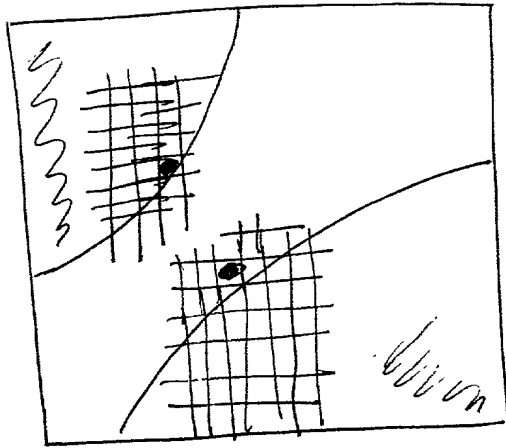


Figure 37c



75-32D



Frame i
Fig. 38A

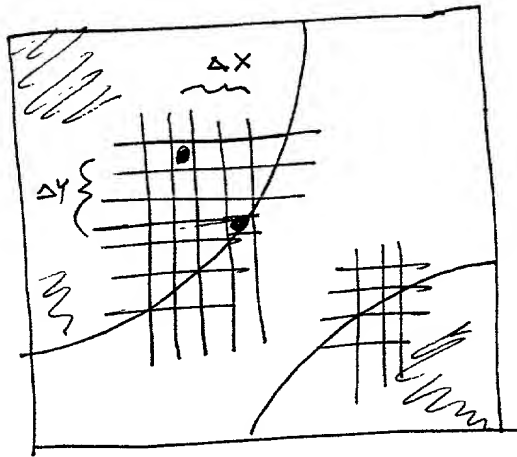


Fig. 38B
Frame i+1

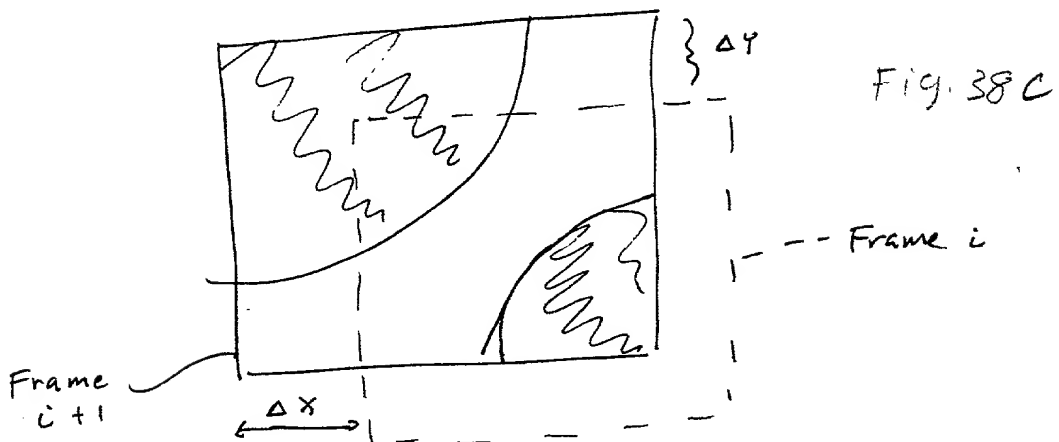
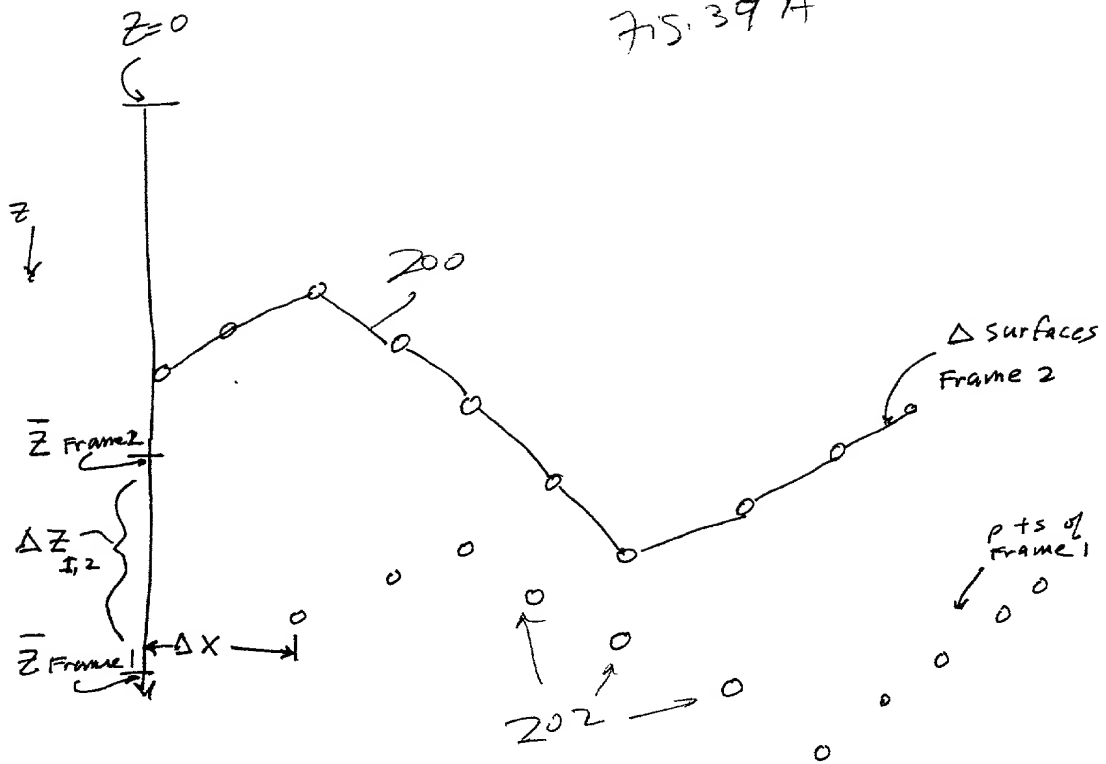


Fig. 38C

715.39 A



715 39B

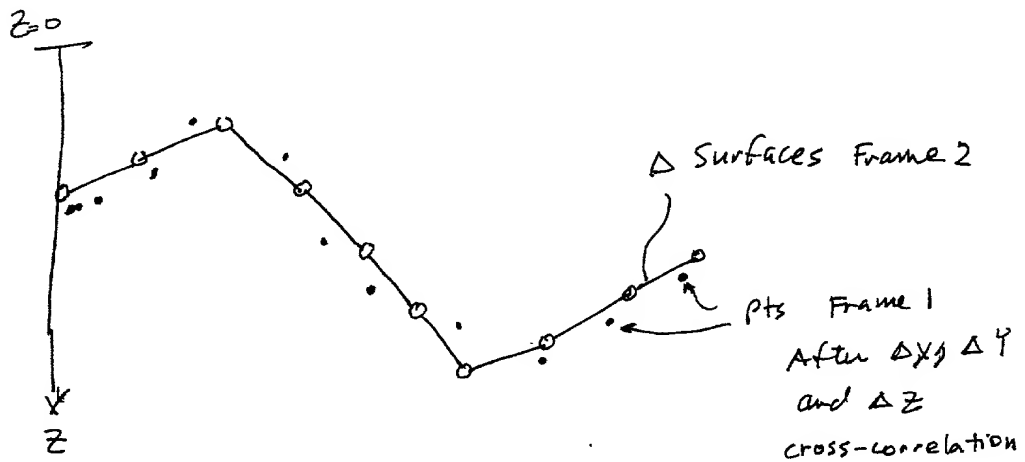


Fig. 40A

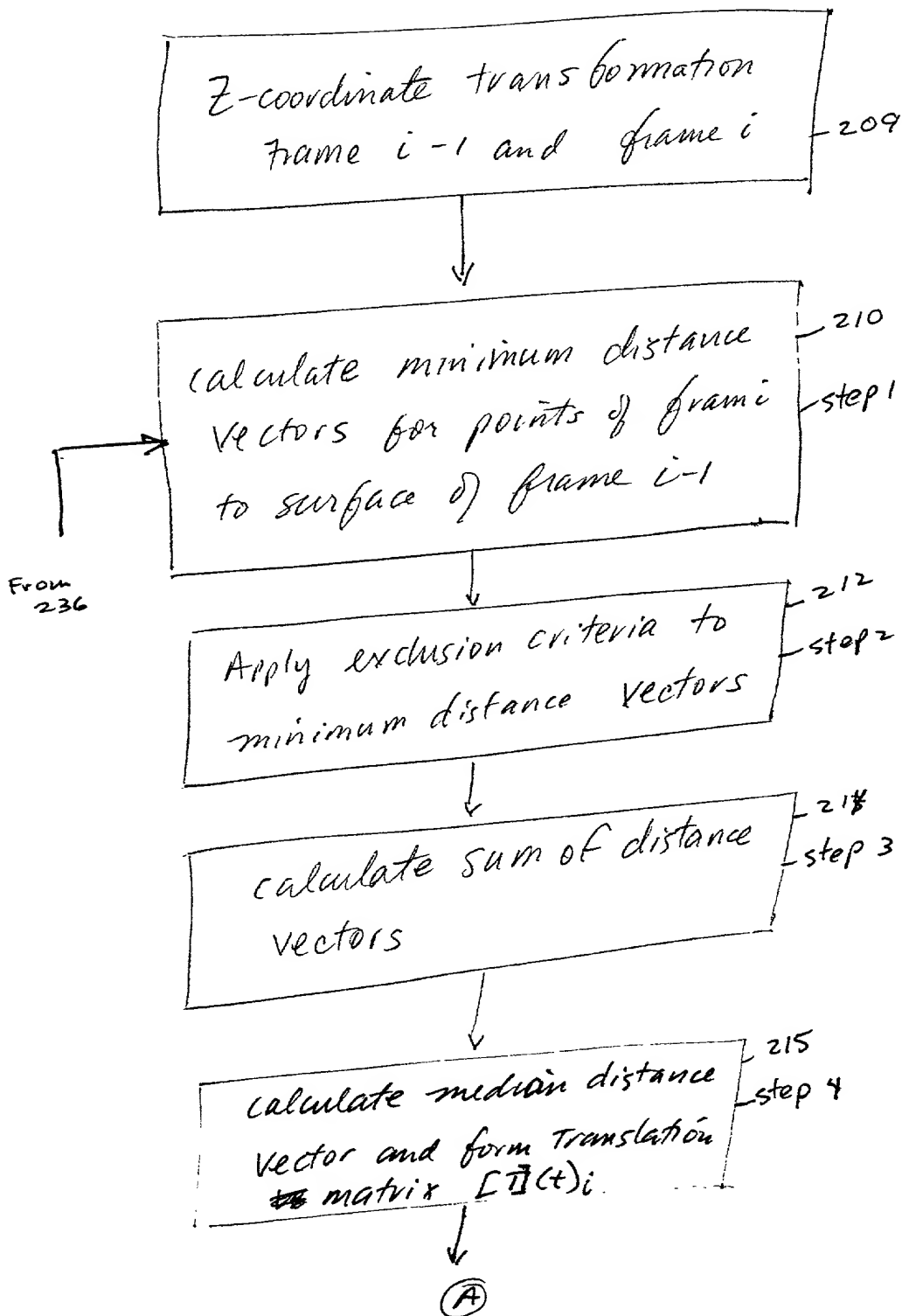
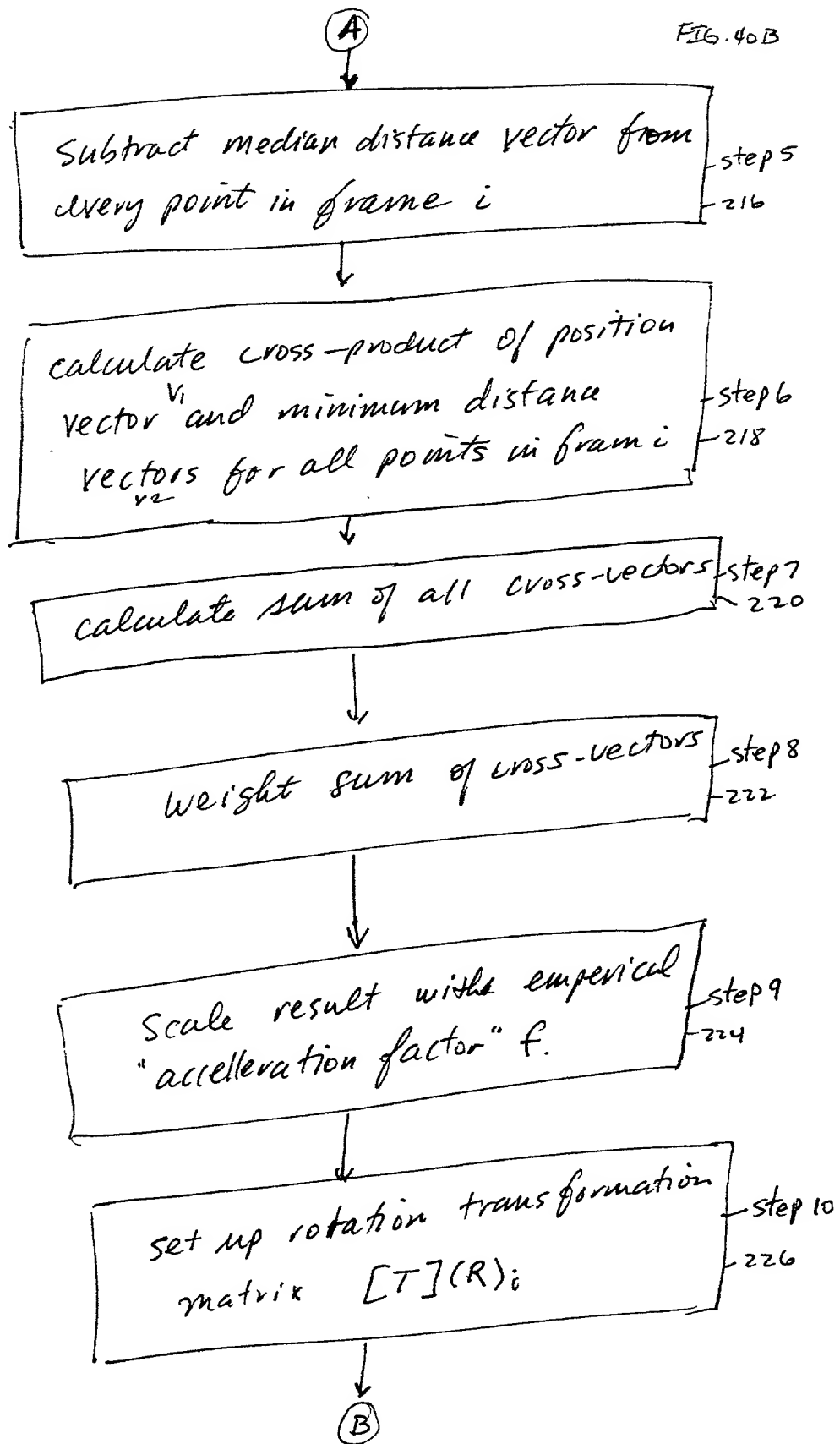
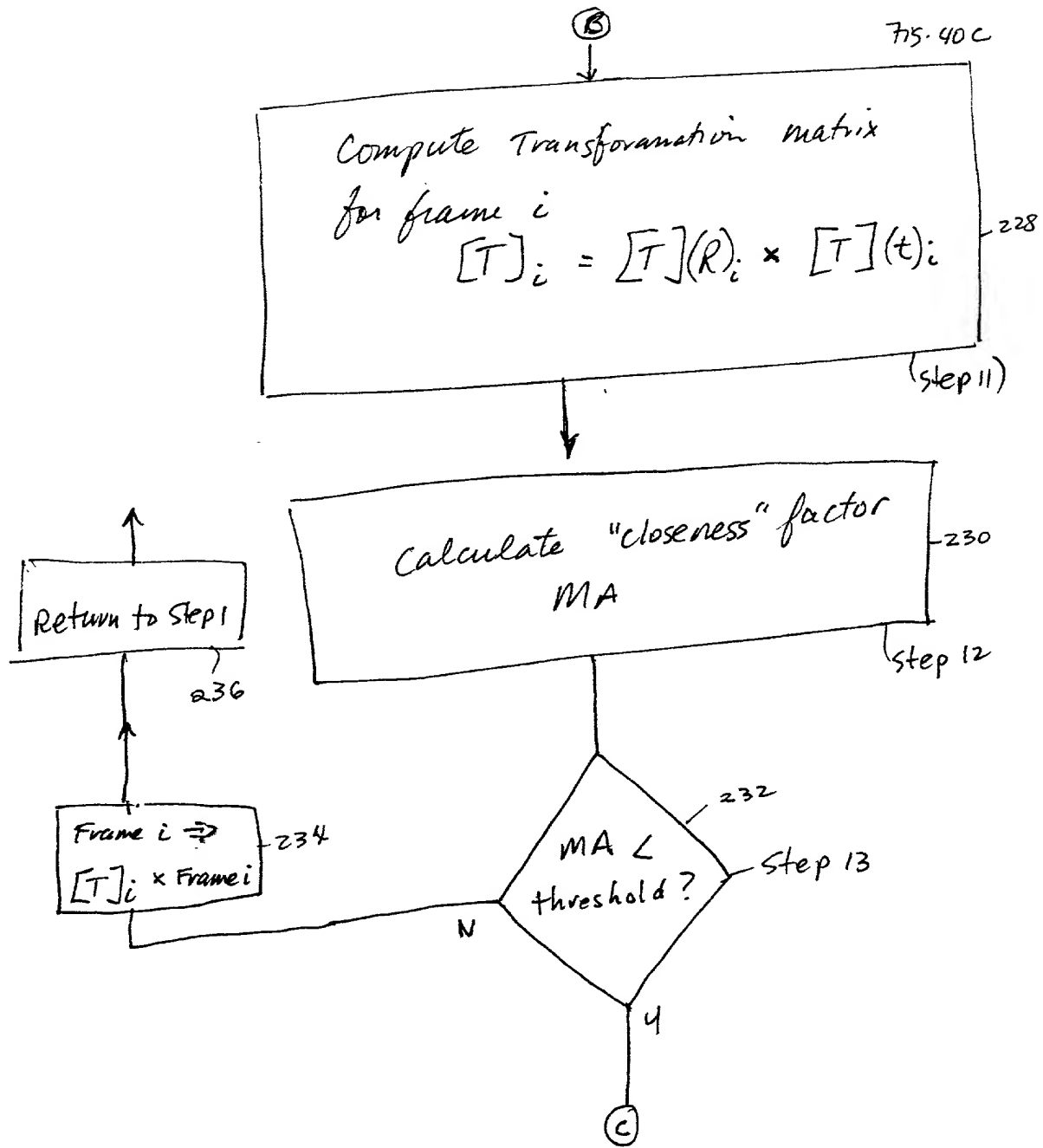


FIG. 40B





Frame to
Frame
registration

Fig. 40 D

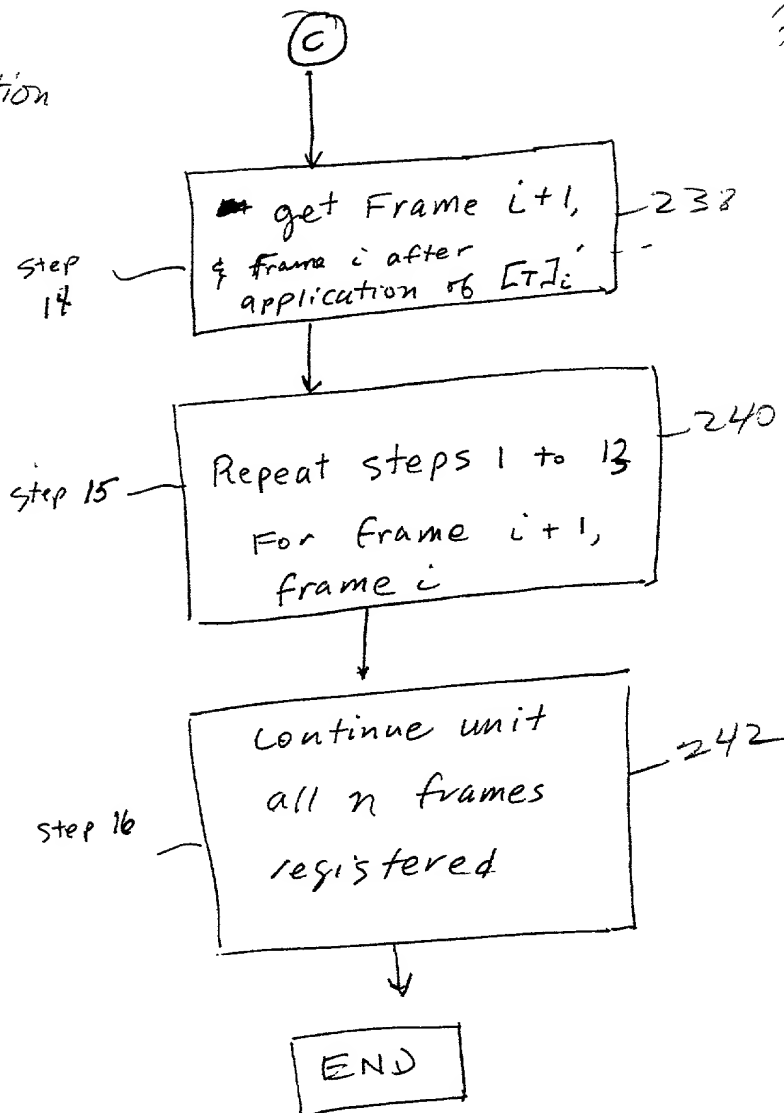


FIG. 41

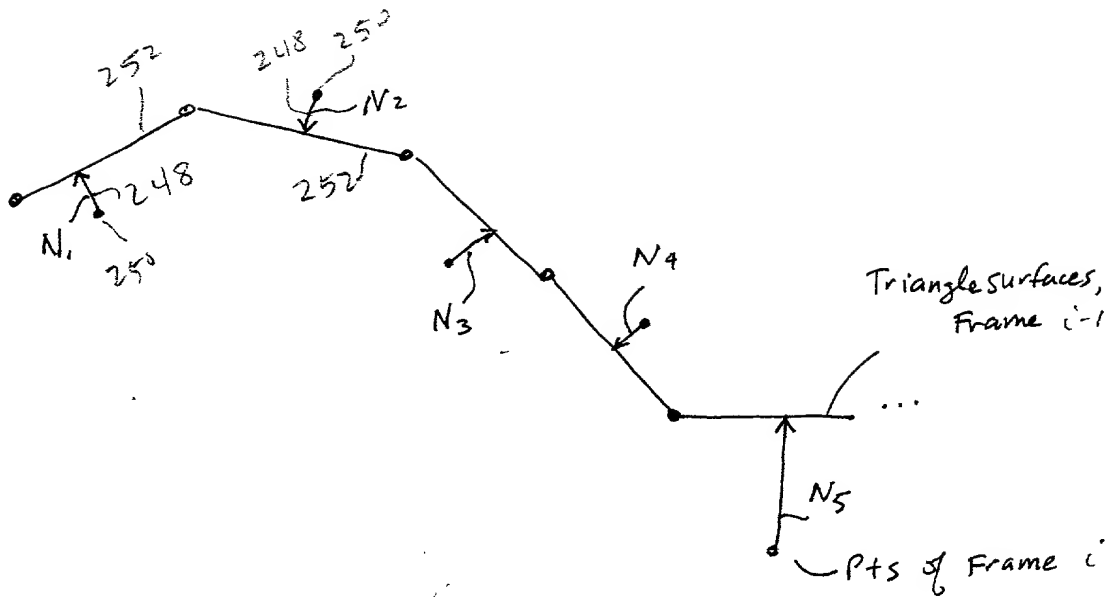


Fig. 42

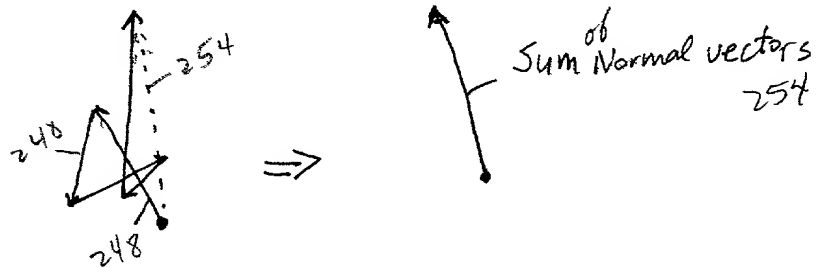


FIG. 43

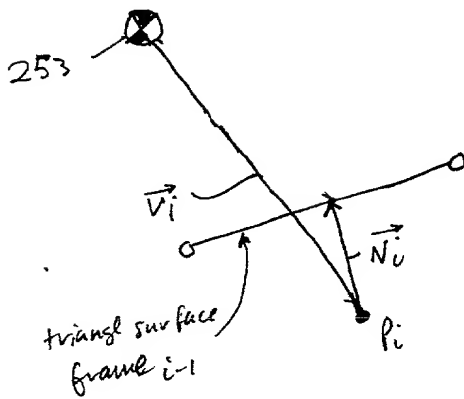
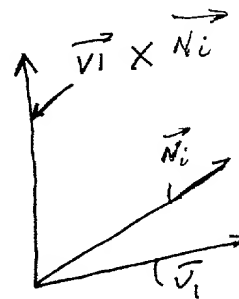


FIG. 44



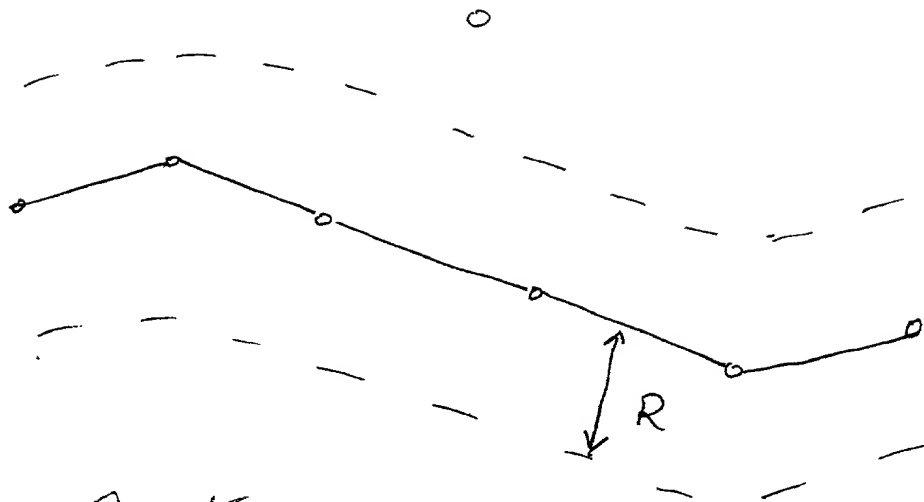


Fig. 45

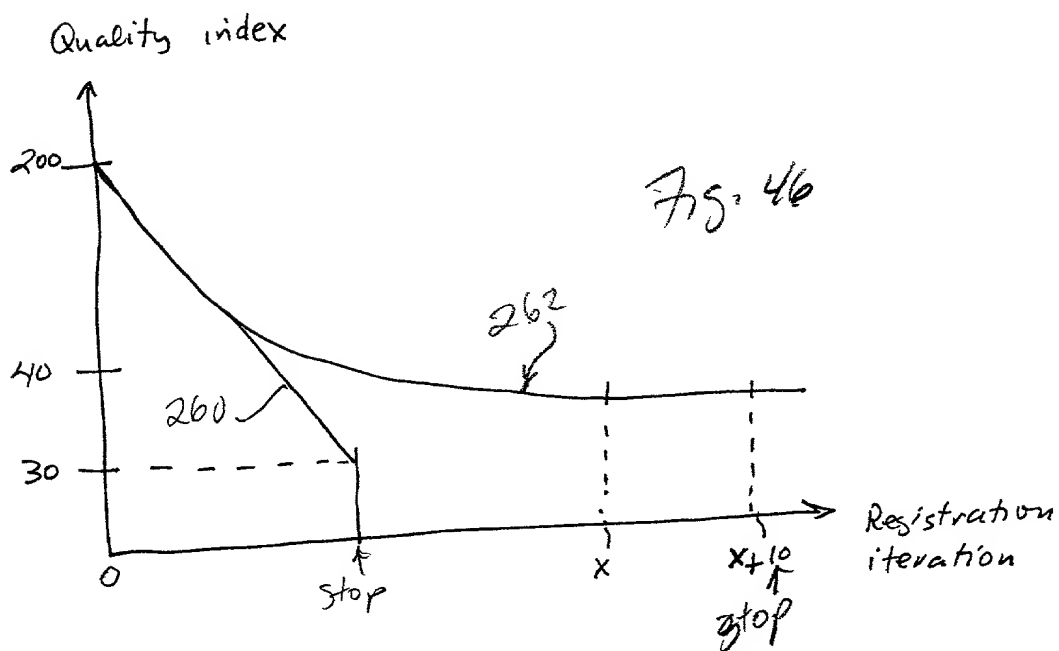


Fig. 46

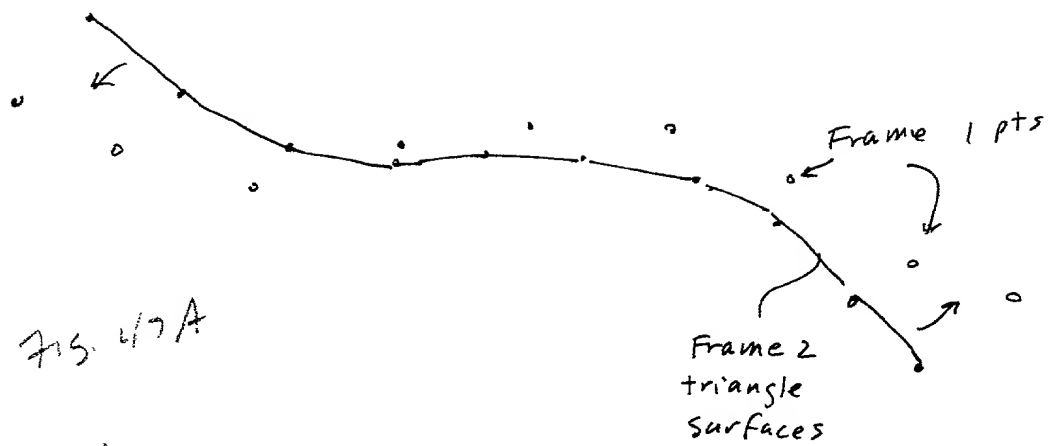


Fig. 47A

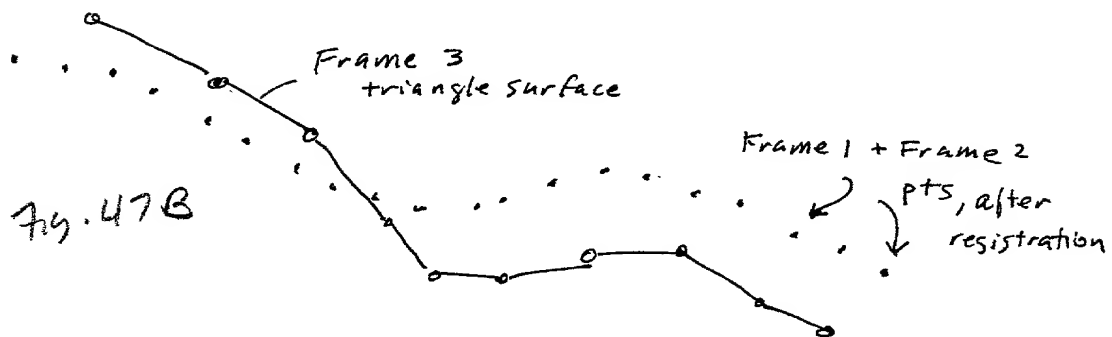
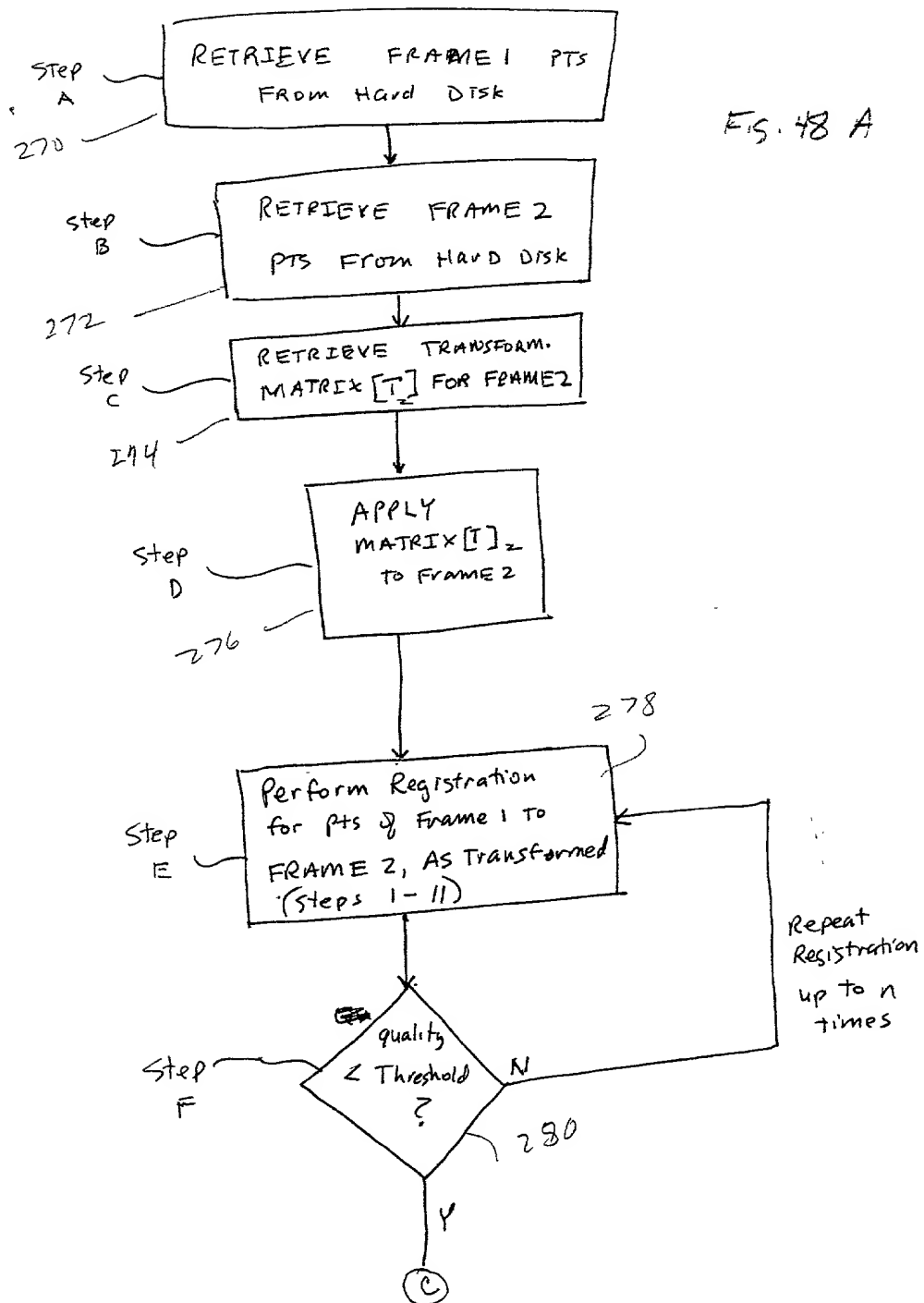
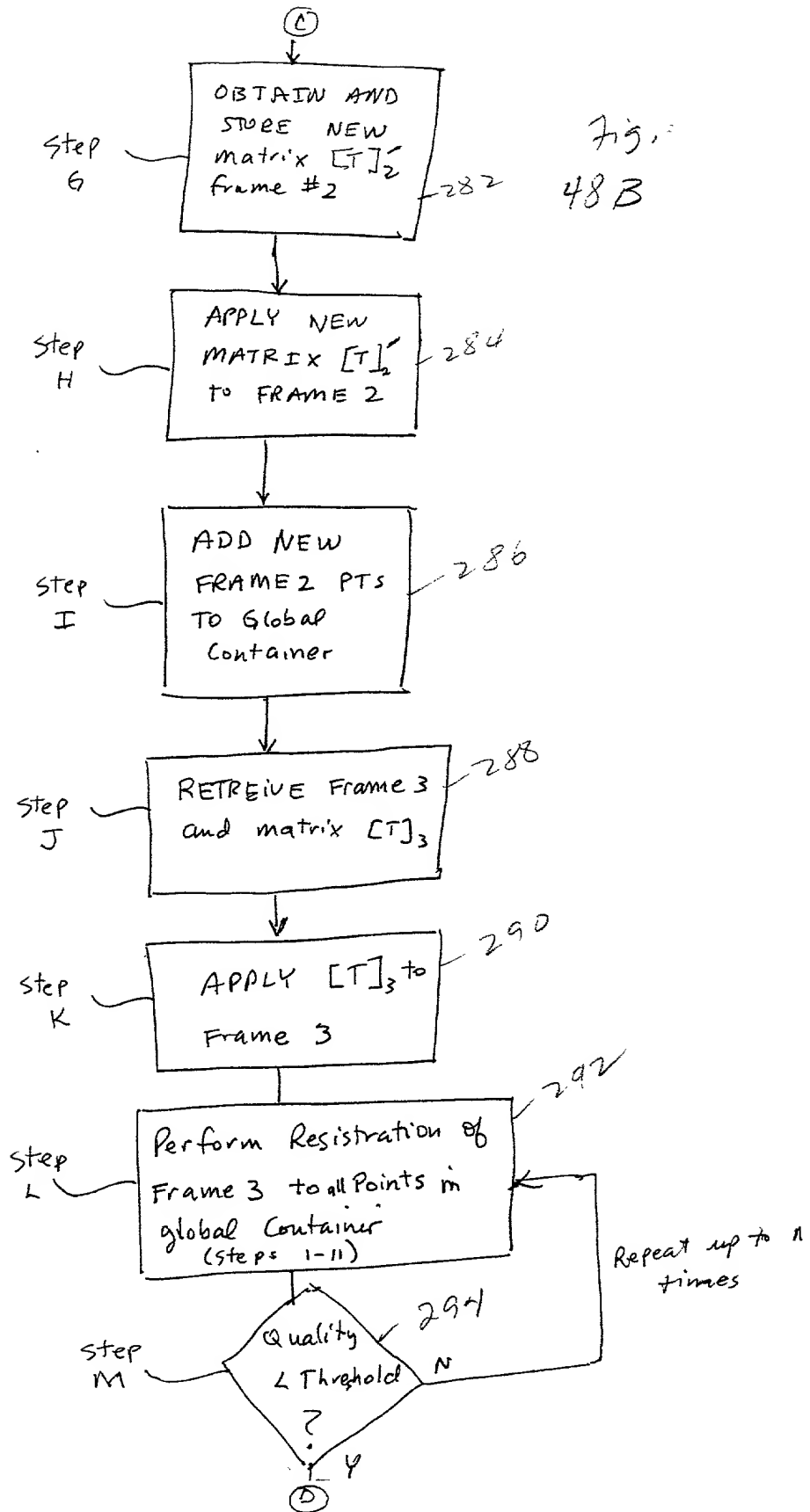


Fig. 47B

Cumulative
Registration



Cumulative
registration



Cumulative
registration

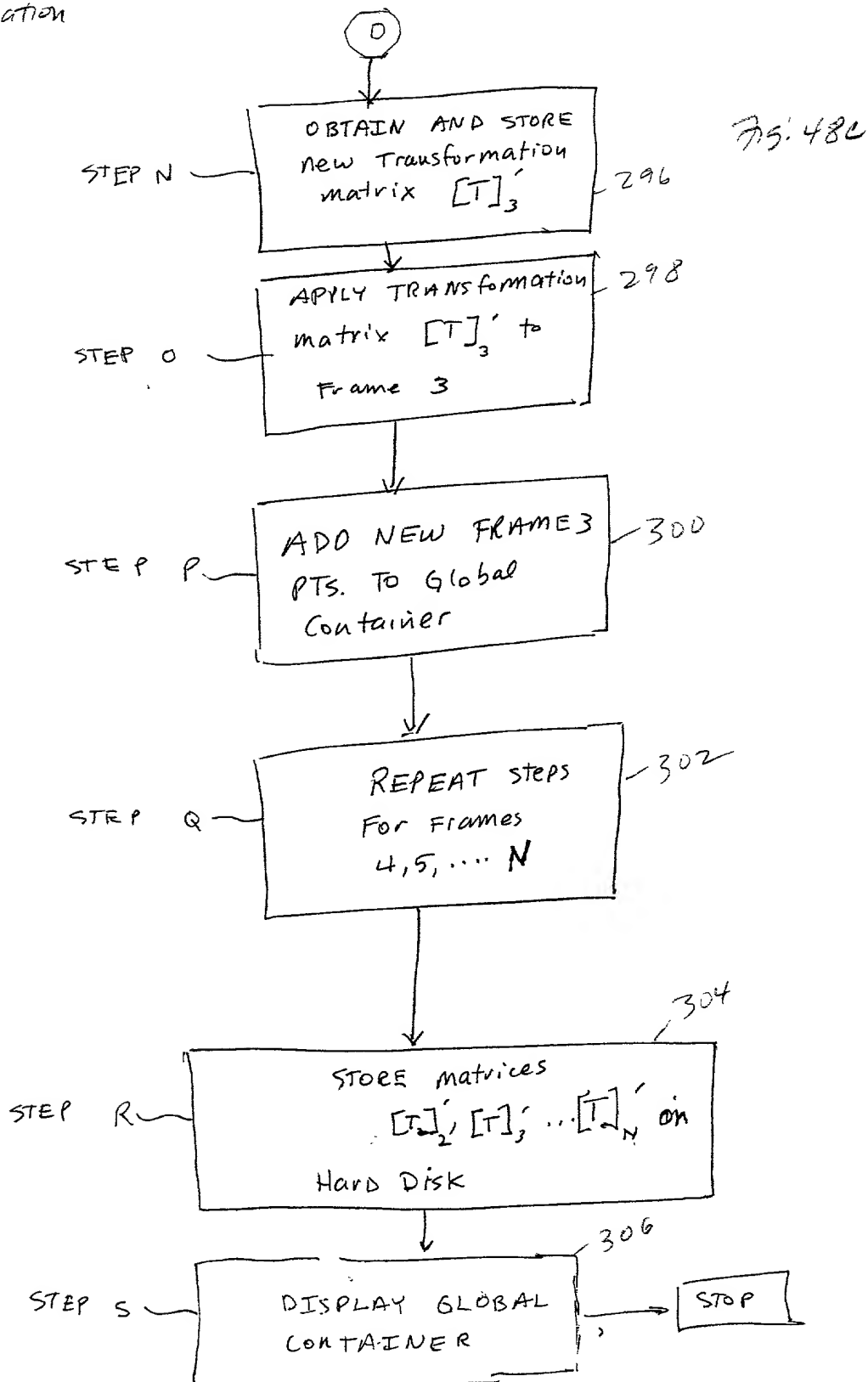


Fig. 49

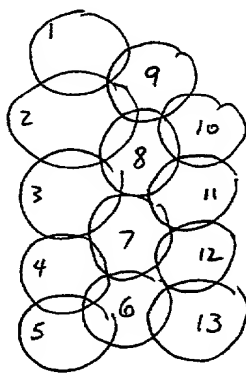
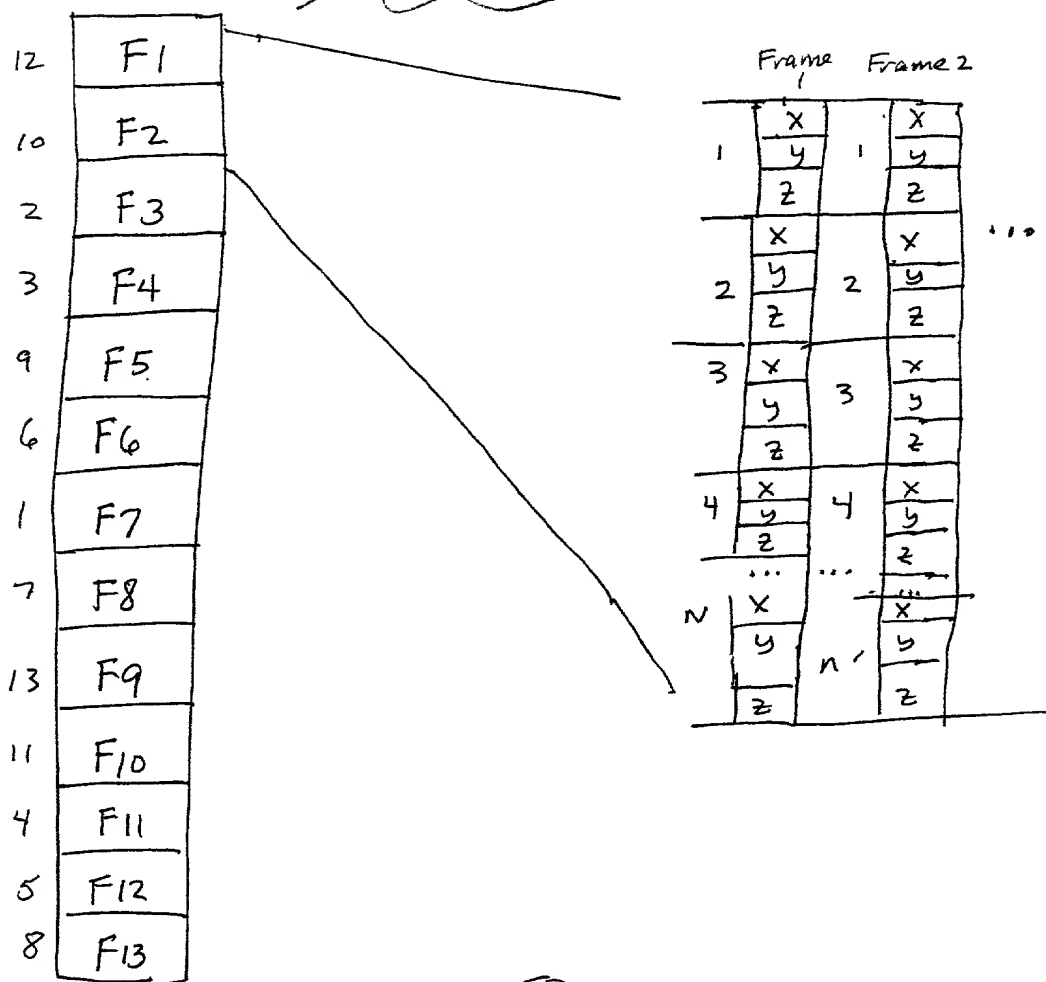


Fig. 50

Fig. 51

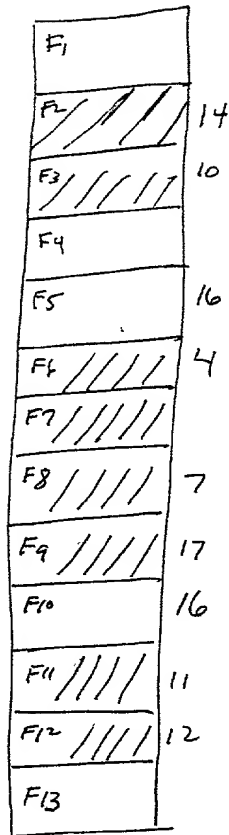


Fig. 52

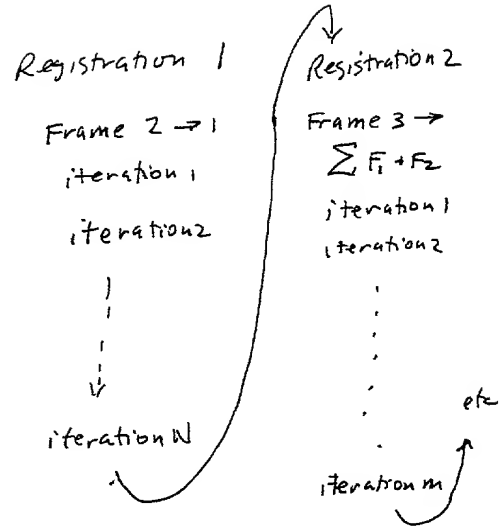


Fig. 53

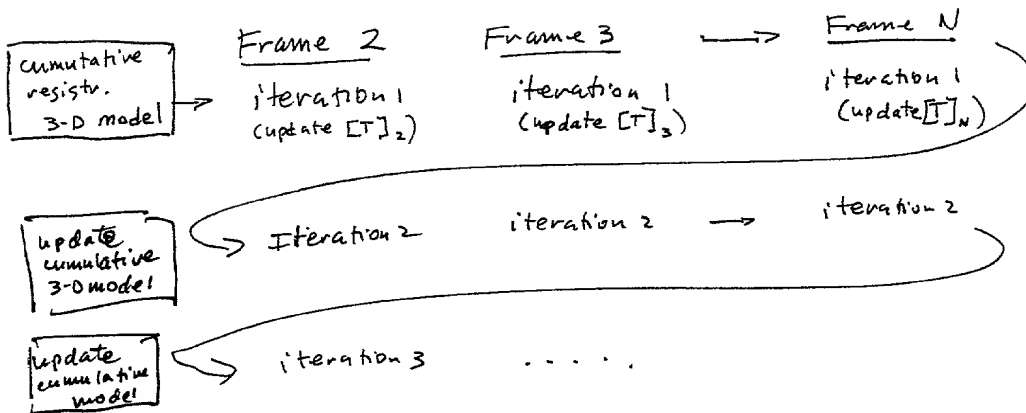
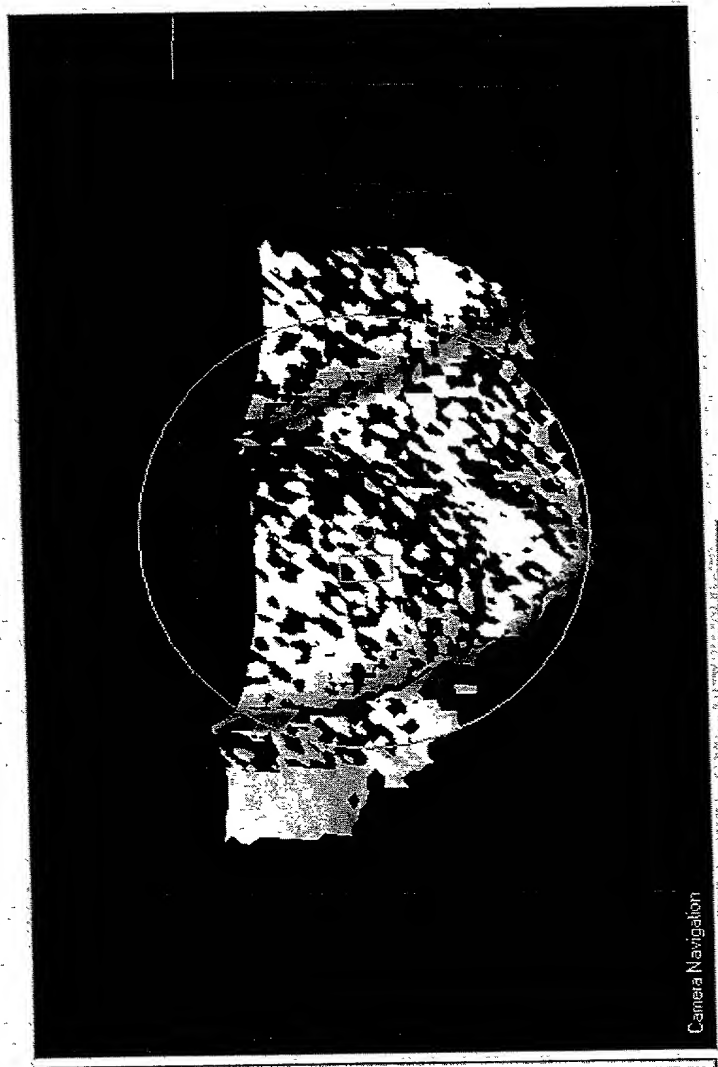


FIG. 54

<input checked="" type="radio"/> Single <input type="radio"/> Cumulative			X Y Z 0.00 0.00 0.00 3.00 0.00 0.00 -3.00 0.00 0.00 0.00 3.00 0.00 0.00 -3.00 0.00		
Registration (raw) Distance limit (SYX) 250.000 y Stationary count 5 Radius (SYX) 2.000 mm Convergence factor 0.100 Number of points to register 400 Accelerate factor 1.6			Registration (raw + fine) Maximal iteration count 400 Overlap size 6.000 Minimum ratio of active points (0..1) 0.200 Maximal triangle size (larger triangles are treated as gaps) 0.500 Maximal edge length (longer edges have no attraction) 1.800 mm Maximal count of unsuccessful files (new segment is started when exceeded) 2 Form factor: Proportion of point distance and element size ($\gamma=0$) 0.1		
Registration (fine) Distance limit (SYX) 50.000 y Final distance 40.000 y Stationary count 10 Radius (SYX) 0.500 mm Convergence factor 0.010 Number of points to register 400 Accelerate factor 1.3			General Count of SYX surfaces for animation (0 = off) 20 Cell size 16 <input checked="" type="checkbox"/> Combine frames cumulative <input checked="" type="checkbox"/> Combine segments cumulative		
Merging Radius of sphere inside which is to replace 0.500 mm Maximal count of edge lines for closing gaps 16			Minimal triangle plane size for closing gaps 0.010 Maximal edge length for closing gaps 1.500 mm Minimal distance from point of base quantity 0.400 mm Maximal distance from edge of base quantity 0.000 mm		
0.00 0.00 0.00			0.00 0.00 0.00		

73.56



Digital Impression | Digital Treatment Planning

- 901ms Nr. 24: n=381 $\bar{U}=0.86$ MA=51.833y R=0.500
- 921ms Nr. 25: n=380 $\bar{U}=0.86$ MA=45.213y R=0.500
- 941ms Nr. 26: n=378 $\bar{U}=0.85$ MA=39.953y R=0.500
- 971ms Nr. 27: n=378 $\bar{U}=0.85$ MA=39.423y R=0.500
- 991ms Nr. 28: n=377 $\bar{U}=0.85$ MA=38.292y R=0.500
- 1011ms Nr. 29: n=377 $\bar{U}=0.85$ MA=37.880y R=0.500
- 1031ms Nr. 30: n=377 $\bar{U}=0.85$ MA=36.951y R=0.500
- 1051ms Nr. 31: n=377 $\bar{U}=0.85$ MA=35.405y R=0.500
- 1081ms Nr. 32: n=379 $\bar{U}=0.85$ MA=34.031y R=0.500
- 1102ms Nr. 33: n=379 $\bar{U}=0.85$ MA=33.812y R=0.500
- 1122ms Nr. 34: n=378 $\bar{U}=0.85$ MA=33.507y R=0.500
- 1142ms Nr. 35: n=378 $\bar{U}=0.85$ MA=33.411y R=0.500
- 1162ms Nr. 36: n=378 $\bar{U}=0.85$ MA=33.190y R=0.500
- 1192ms Nr. 37: n=378 $\bar{U}=0.85$ MA=32.670y R=0.500
- 1212ms Nr. 38: n=378 $\bar{U}=0.85$ MA=32.608y R=0.500
- 1232ms Nr. 39: n=378 $\bar{U}=0.85$ MA=32.488y R=0.500
- 1252ms Nr. 40: n=378 $\bar{U}=0.85$ MA=32.448y R=0.500
- 1272ms Nr. 41: n=378 $\bar{U}=0.85$ MA=32.363y R=0.500
- 1302ms Nr. 42: n=378 $\bar{U}=0.85$ MA=32.250y R=0.500
- 1322ms Nr. 43: n=379 $\bar{U}=0.85$ MA=38.589y R=0.500
- 1342ms Nr. 44: n=379 $\bar{U}=0.85$ MA=38.526y R=0.500
- 1362ms Nr. 45: n=376 $\bar{U}=0.85$ MA=27.686y R=0.116
- Final Distance limit reached

Camera Navigation

History

First

Grid Filter:

No Filter

Tree

Digital Impression Scene Graph

Segment_03

Segment_05

Segment_06

Segment_07

Upper jaw front (Segment_01) 1189 Frames

Frame_01_001

Frame_01_002

Frame_01_003

Frame_01_004

Frame 01_005

Drag & Drop Mode:

Landmark Label

Date

18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28	
43	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38	

01/18/01 14:08:47

01/18/01 14:08:47

01/18/01 14:08:47

01/18/01 13:11:40



DLAG AND DROP MODE

Landmark Label

75.57

Diagram illustrating the upper jaw front (segment 1) with numbered boxes (18 to 28) and labels 306.

Fig. 58 A

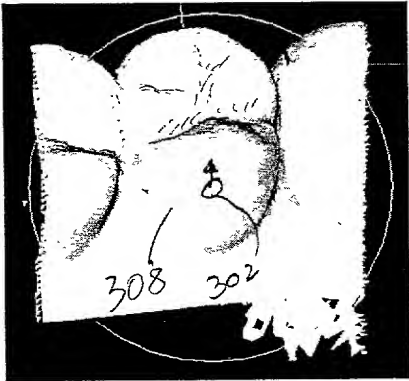


Fig. 58 B
310

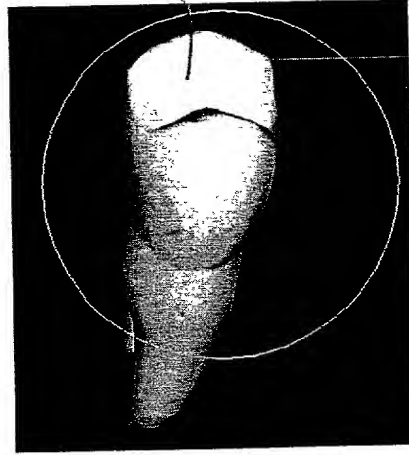


Fig.
58 C

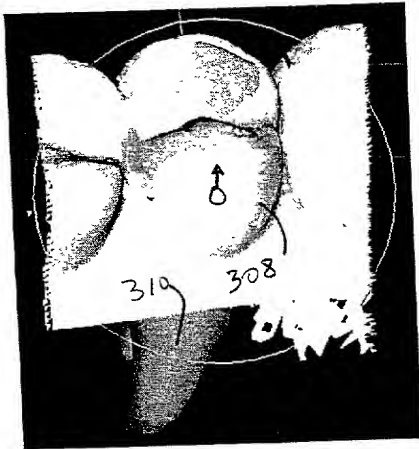


Fig. 58 D

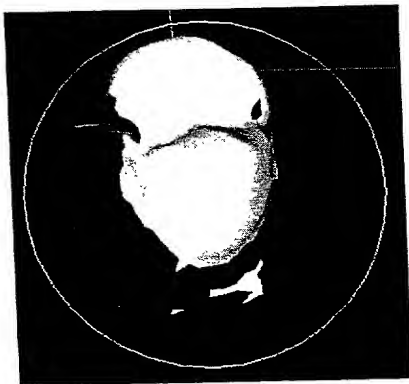
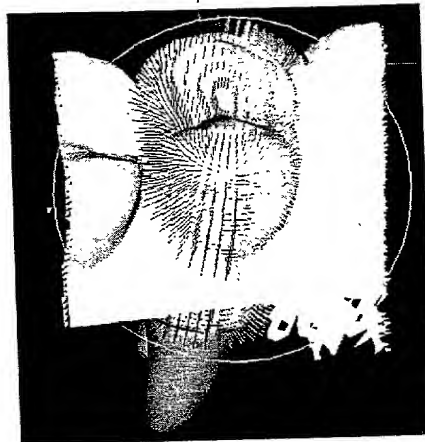
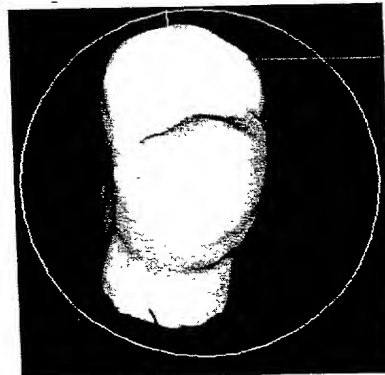


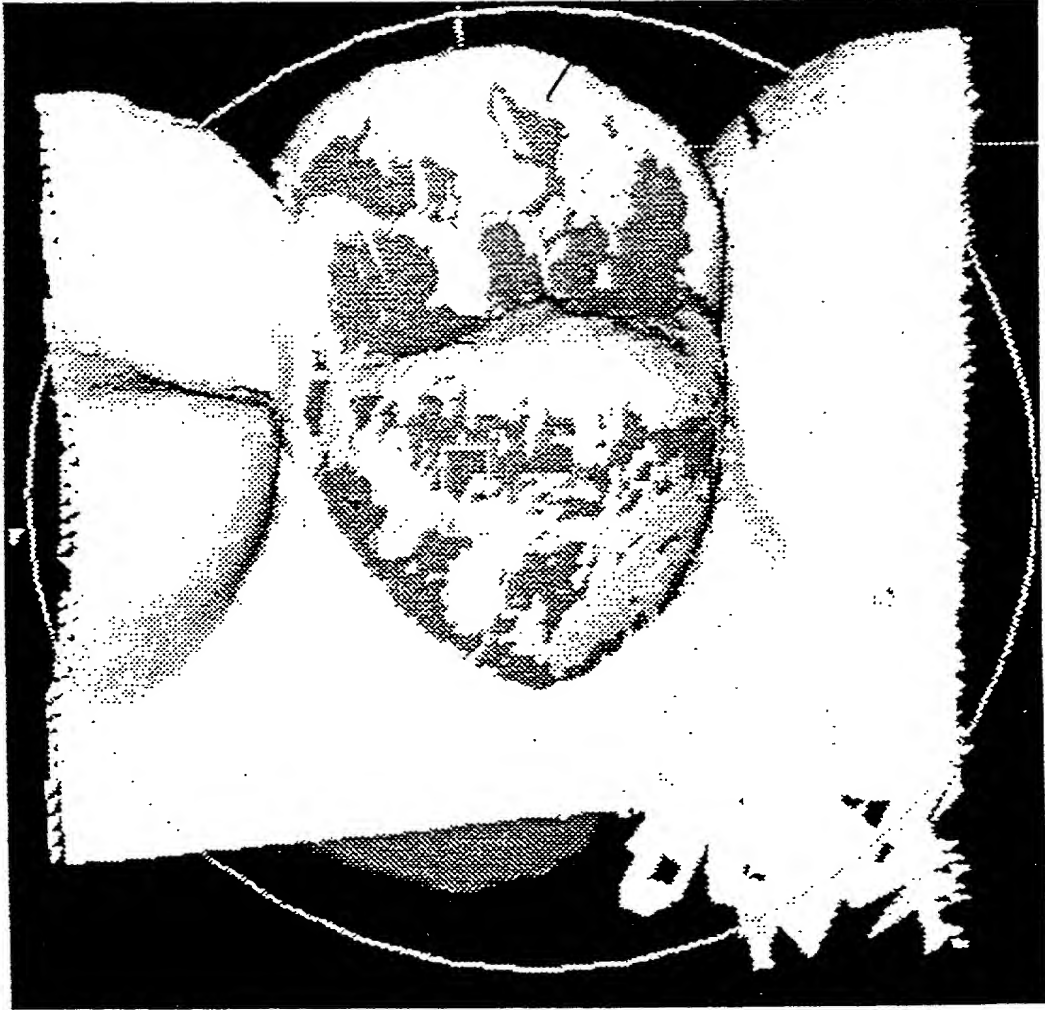
Fig. 58 E



312 Fig. 58 F

u).

3/2
1



75. 59

- [Icon] Schmidt, Frank
- [Icon] + Maxilla Stages
 - [Icon] Observed (17-27)
 - [Icon] Target (16x22 5t)
- [Icon] + Mandible Stages
 - [Icon] Observed (47-37)
 - [Icon] Target (16x22 5t)

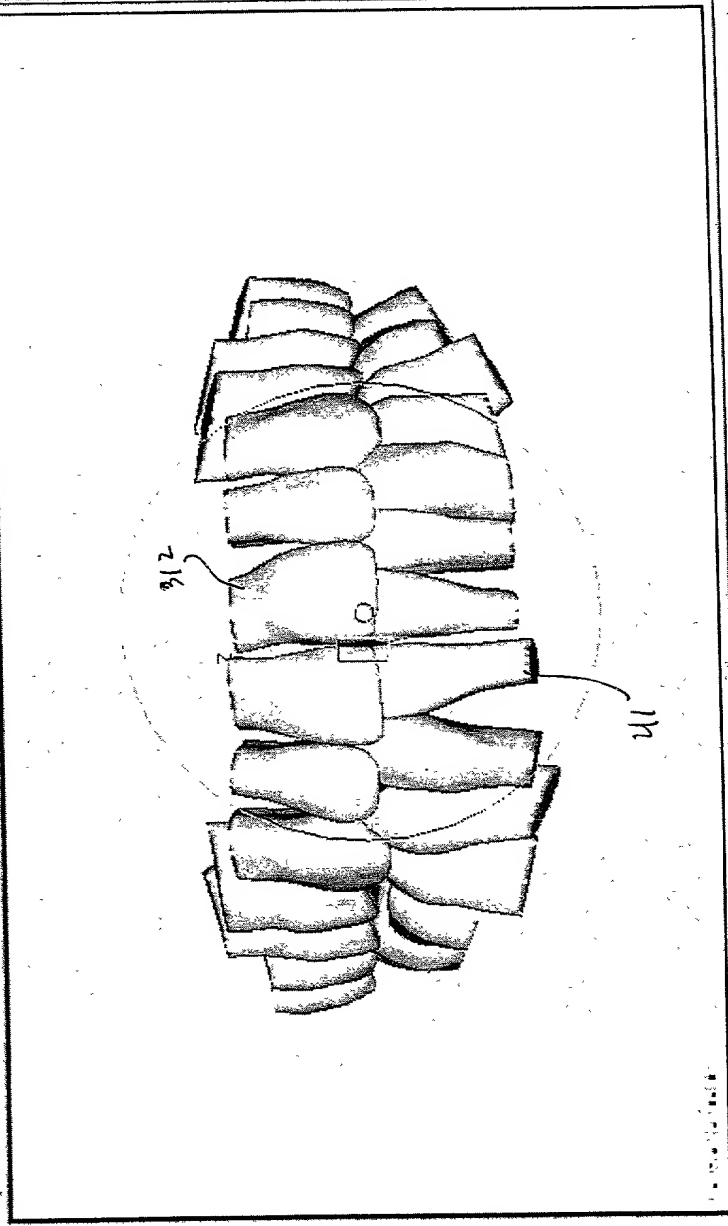


Fig. 62

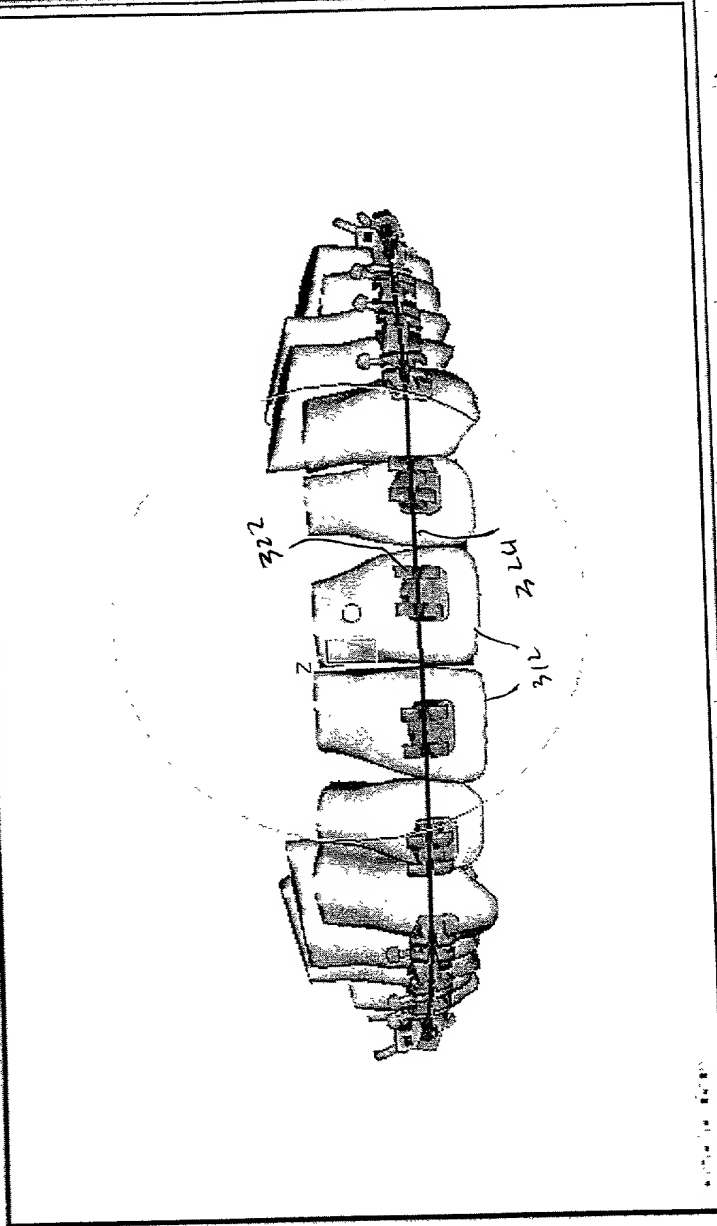
Space Management

	48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38	
Observed Stage		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	● Tooth is observed
Current Stage (2)		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	● Missing or extracted tooth
Target Stage																	● Create space or extract tooth
Mesial gap size	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	● Mesial gap size
Tooth Thicken.																	● Tooth Thicken.



Digital Impression Digital Treatment Planning

- ☒ Schmidt, Frank
- ☐ + Maxilla Stages
- ☐ (17-27)
- ☒ Target
- ☐ + Mandible Stages
- ☐ (47-37)



● Patient ● Limits ● Differences ● Space Management ● Bonding Correction ● Technique ● U/L Relation ● Bracket Offset ● Slide Line ● Target Correction

Technique

	18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
Inout [mm]	0.4	0.8	1	1.1	1.1	0.7	1.3	1.1	1.1	1.3	0.7	1.1	1.1	1	0.8	0.4
Torque [°]	25	-10	-10	-7	-7	7	7	14	14	7	7	-7	-7	-10	-10	-25
Angulation [°]	3	0	0	0	0	10	8	5	5	8	10	0	0	0	0	3
Dist. Offset [°]	10	5	12	0	0	0	0	0	0	0	0	0	0	12	5	10
Buccal Step [mm]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jig Height [mm]	4	4	4	4	4	4.5	4	4	4	4	4.5	4	4	4	4	4

NUM

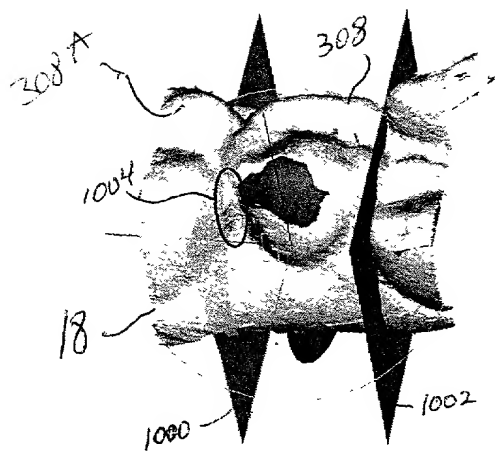


Fig. 64A

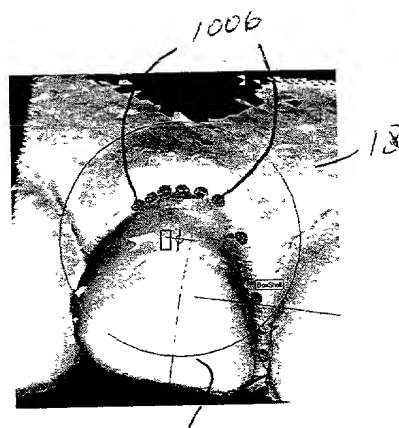


Fig. 64B

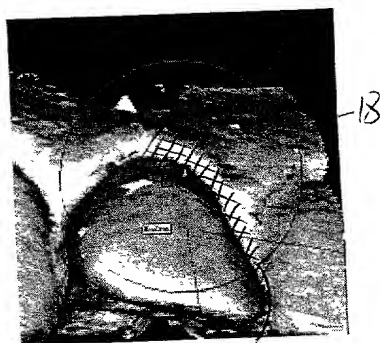


Fig. 64C

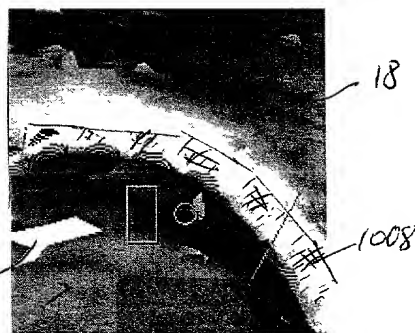


Fig. 64D

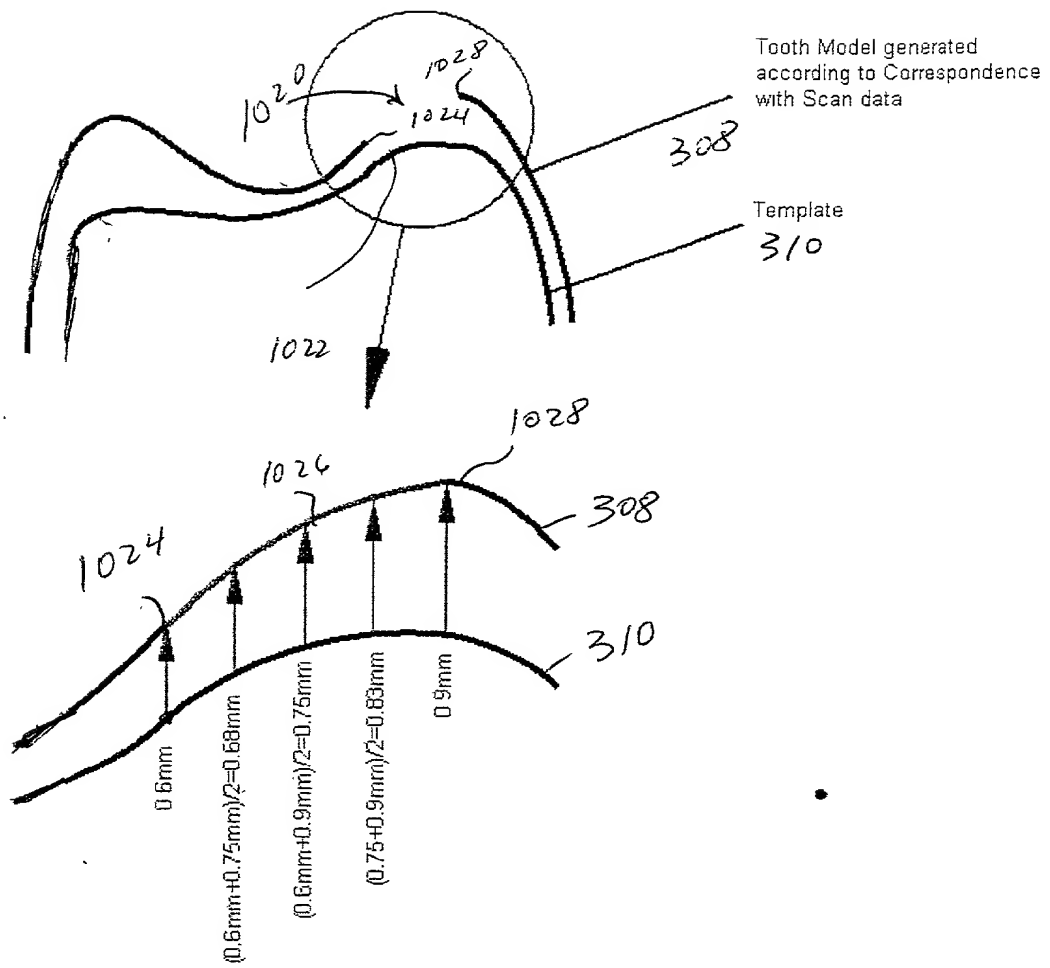


Fig. 65